DOCUMENT RESUME

ED 094 334 CS 001 224

AUTHOR	Weintraub, Samuel, Comp.; And Others
TITLE	Summary of Investigations Relating to Reading, July 1, 1972, to June 30, 1973.
INSTITUTION	International Reading Association, Newark, Del.
PUB DATE	74
NOTE	273p.
AVAILABLE FROM	International Reading Association, 800 Barksdale Road, Newark, Delaware 19711 (Single Copies, $3.75)
JOURNAL CIT	Reading Research Quarterly; v9 n3 p247-513 Spring 1974
EDRS PRICE	MF-$0.75 HC-$12.60 PLUS POSTAGE
DESCRIPTORS	Language Development; Learning Disabilities; *Literature Reviews; Reading Ability; Reading Difficulty; *Reading Instruction; Reading Materials; *Reading Research; *Reading Skills; Reading Tests; Remedial Reading; *Teacher Education

ABSTRACT

Three hundred and sixty-nine reports of reading research published between July 1, 1972, and June 30, 1973, are summarized for educators and researchers. The research studies are categorized into six main areas, four of which have been further subcategorized. The majority of studies reported were classified into two of the six major categories, "The Physiology and Psychology of Reading" and the "Teaching of Reading." Under the designation of "Physiology and Psychology," three subdivisions contribute the greatest number of studies: "Reading and Language Abilities," "Factors Related to Reading Disability," and "Reading and Legibility," The studies appearing under the "Teaching-Testing" subcategory constitute the largest number of reports appearing in any of the "Teaching of Reading" subclassifications. The majority of studies reported in the "Sociology of Reading" are concerned with the content analysis of various materials. A listing of other bibliographies and reviews of reading research appears as the first major category of the summary. The remaining major areas are "Teacher Preparation and Practice" and "Reading of Atypical Learners." The reviews have been classified under specific subcategories or put under a miscellaneous subheading. (Author/RB)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED 094554

Reading Research Quarterly Volume IX/No. 3

Published by the International Reading Association, *Newark, Delaware*

Number 3, 1973-1974

Summary of investigations relating to reading July 1, 1972, to June 30, 1973

SAMUEL WEINTRAUB, HELEN M. ROBINSON, HELEN K. SMITH *and* NANCY ROSER

I. *Summaries of specific aspects of reading research* 249
- I-1 General summaries 249
- I-2 International studies 250
- I-3 College-adult reading 250
- I-4 Vision-visual perception 250
- I-5 Prose learning 250
- I-6 Literature and reading 251
- I-7 Culturally different 251
- I-8 Miscellaneous 251

II. *Teacher preparation and practice* 252

III. *Sociology of reading* 256
- III-1 Use of mass media 256
- III-2 Content analysis 263
- III-3 Readability of printed sources 274
- III-4 Reading interests, preferences, and habits 276

contents continued

READING RESEARCH QUARTERLY *is published 4 times a year by the International Reading Association, Inc. Members of the Association have the option of receiving the* READING RESEARCH QUARTERLY, THE READING TEACHER, *or the* JOURNAL OF READING *as part of their $15 membership dues. Subscriptions for institutions are also available at $15 per volume year. Single copies $3.75.* *Copyright 1974 by the International Reading Association, Inc.* *Second class postage paid at Newark, Delaware, and at additional mailing offices.*

Correspondence on editorial matters should be addressed to the Editors, 207 Education Building, Indiana University, Bloomington, Indiana 47401. Send change of address notices (include old label, allow 60 days) and other business correspondence to IRA, 800 Barksdale Road, Newark, Delaware 19711.

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY

International Reading Association

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

CS 001 224

Summary of investigations relating to reading, July 1, 1972, to June 30, 1973 (continued)

IV. *Physiology and psychology of reading* 279

IV-1 Physiology of reading 279
IV-2 Intellectual abilities and reading 283
IV-3 Modes of learning 285
IV-4 Experiments in learning 291
IV-5 Visual perception and reading 296
IV-6 Auditory perception 306
IV-7 Reading and language abilities 308
IV-8 Vocabulary 319
IV-9 Factors in interpretation 321
IV-10 Oral reading 330
IV-11 Rate of reading 334
IV-12 Other factors related to reading 336
IV-13 Factors related to reading disability 344
IV-14 Personality, self concept, and reading 358
IV-15 Socio-cultural factors and reading 362
IV-16 Home and family characteristics 366
IV-17 Reading interests 367
IV-18 Readability and legibility 372

V. *The teaching of reading* 385

V-1 Status of reading instruction 385
V-2 Comparative studies 389
V-3 Early reading 390
V-4 Reading readiness 393
V-5 Teaching reading — primary grades 397
V-6 Teaching reading — grades 4 to 8 402
V-7 Teaching reading — high school 405
V-8 Teaching reading — college and adult 407
V-9 Teaching materials 412
V-10 Corrective and remedial instruction 418
V-11 Teaching — testing 427
V-12 Grouping 445

VI. *Reading of atypical learners* 445

Annotated bibliography 446

THE AUTHORS

SAMUEL WEINTRAUB received his doctorate from the University of Illinois and has served on the faculties of Case-Western University and the University of Chicago. He is presently Associate Professor, Indiana University. Dr. Weintraub is coeditor of the *Reading Research Quarterly*. He has contributed to various professional journals. Dr. Weintraub can be contacted at the School of Education, Indiana University, Bloomington, Indiana 47401.

HELEN M. ROBINSON is Professor Emeritus in the Department of Education at the University of Chicago. Until retirement, she was the William S. Gray Research Professor of Reading and Director of the Reading Research Center. Also, she was the senior author of the annual summary of research in reading from 1961 through 1969. She has authored or edited more than 100 articles, monographs, and books in reading. She is a member of the Editorial Advisory Board of the *Reading Research Quarterly*. Dr. Robinson can be contacted at 3317 West Lake Road, Canandaigua, New York 14424.

HELEN K. SMITH is Professor of Education at the University of Miami at Coral Gables and chairman of The Graduate Area in Reading. Formerly, she served on the faculties of the University of Chicago and the University of Illinois at Chicago Circle. She was also a high school teacher of reading and English, a reading consultant, a diagnostician at the University of Chicago Reading Clinic, and a research assistant. She is currently serving on the Board of Directors of IRA. Dr. Smith has contributed to various professional journals. She can be contacted at the School of Education, University of Miami, Coral Gables, Florida 33124.

NANCY L. ROSER is Assistant Professor of Education at the University of Texas at Austin. She received her doctorate from Indiana University. Dr. Roser is a member of the IRA Evaluation of Tests Committee and has appeared on the IRA program on various occasions. She was invited to submit a paper to the International Symposium on Educational Evaluation recently. She has served as consultant for several school systems and is presently engaged in pursuing research studies on her own. Dr. Roser can be contacted at School of Education, Department of Curriculum and Instruction, 604 W. 24th Street, University of Texas, Austin, Texas 78705.

COEDITORS

ROGER FARR/SAMUEL WEINTRAUB
Indiana University

EDITORIAL ASSOCIATE

BRUCE J. TONE

EDITORIAL ASSISTANT

MARGARET TAYLOR

EDITORIAL ADVISORY BOARD

NICHOLAS ANASTASIOW
Indiana University

HAROLD BLIGH
Harcourt Brace Jovanovich

DOLORES DURKIN
University of Illinois

WILLIAM ELLER
State University of New York at Buffalo

KENNETH GOODMAN
Wayne State University

ALBERT J. HARRIS, EMERITUS
City University of New York

HELEN M. ROBINSON, EMERITUS
University of Chicago

STANLEY F. WANAT
University of California at Berkeley

RONALD WARDHAUGH
University of Michigan

JAMES L. WARDROP
University of Illinois

Manuscripts should be submitted in quadruplicate and follow the general style of the Author's Guide of the READING RESEARCH QUARTERLY. Manuscripts should be accompanied by an abstract of 100-150 words and an author vita. Send all manuscripts and correspondence regarding editorial matters to the Editors, 231 Pine Hall, Indiana University, Bloomington, Indiana 47401.

The summary: *views on a statistically significant trend*

Individuals who have perused the pages of the annual summary over time may well have noted that a marked change has occurred in the distribution of the content in the past several years. For a lengthy period, the Teaching of Reading included the largest number of studies. Although the teaching category still contains many studies, those numbers have dwindled in the past several years while the Physiology and Psychology category has grown considerably. We have not applied statistical procedures to assess this change, but we feel that the difference would reach significance at the .01 level. As in so many instances, one needs to ask what the implications of such a change really are.

The drop in the Teaching of Reading section is not necessarily to be mourned. Many of these research efforts, if not most, were methods studies. As such, they carried with them the many problems and difficulties connected with such research. When carefully assessed, few methods studies met the criteria of excellence. The basic integrity of many is open to serious question. When one attempts to evaluate this body of literature or to synthesize an area of methods studies, the task becomes both frustrating and fruitless. So many of the reports have added up to so little that few generalizations can be induced.

Psychology oriented research, on the other hand, tends to have an elegance of design and sophistication of statistical technique that far surpasses that in most other areas. It is number oriented and unquestionably superior in terms of the basic design to studies in the teaching section. Despite this — or perhaps because of it — one feels that it is sometimes flawed. Some of the studies appear to bury themselves in statistics. The numerical displays become so dazzling as to overpower the studies themselves. One wonders if the fragmented nature of much of this research is not due in part to what almost appears to be a subservience to the design. Perhaps psychologically oriented research is not the ultimate solution for the reading field either.

Conceivably, we have erred in the types of designs and statistical procedures we've used in the past and continue to use. Perhaps for purposes of the reading field, we need to look at other ways of approaching problems than through the classical designs commonly employed. Possibly better answers may come through venturing

into other, "looser" research. Few intensive case studies appear in the literature. Longitudinal studies of various kinds are almost non-existent. As one views reading research, much of it seems to be a hit and run type. We rush in to administer 14 tests, collect 2 minutes of information from each child in an individual interview, and then correlate these data, making grand generalizations about the nature of reading.

Maybe we haven't solved our problems or answered many questions because we have attempted to be too rigorous in applying our statistical procedures. Rigor comes in many forms, including mortis. Perhaps a fresh breath, a new view is needed. Observational studies, case reports of an intensive nature, historical research, depth interviews, Piaget-type experimentation, broadly based evaluation studies may all help us to understand the reading process more fully. If nothing else, they might permit us to view reading from a different perspective — and possibly we need that different viewpoint now.

We are not suggesting that all methods studies and all psychology oriented research be halted. Our statement is only a plea that we broaden our perspective of what research is and that we look to other kinds than the "classical" designs. A few years hence, the summary may possibly include a number of such studies. Possibly then we'll have another statistically significant change. And perhaps our knowledge base will be greater. Significantly so.

—The Editors

Summary of investigations relating to reading, July 1, 1972, to June 30, 1973

SAMUEL WEINTRAUB, *Indiana University*
HELEN M. ROBINSON, *Emeritus, University of Chicago*
HELEN K. SMITH, *University of Miami*
NANCY L. ROSER, *University of Texas at Austin*

SUMMARIZES 369 reports of reading research published between July 1, 1972, and June 30, 1973. The research studies are categorized into 6 main areas, 4 of which have been further subcategorized. As in past years, the majority of studies reported was classified into 2 of the 6 major categories: The Physiology and Psychology of Reading and the Teaching of Reading. Under the designation of Physiology and Psychology, 3 subdivisions contribute the greatest number of studies: Reading and Language Abilities, Factors Related to Reading Disability, and Readability and Legibility. The studies appearing under the Teaching-Testing subcategory constitute the largest number of reports appearing in any of the Teaching of Reading subclassifications. The majority of studies reported in the Sociology of Reading is concerned with the content analysis of various materials. A listing of other bibliographies and reviews of reading research appears as the first major category of the present summary. The reviews have been classified under specific subcategories or put under a Miscellaneous subheading. An annotated bibliography appears following the written text.

Résumé des investigations portant sur la lecture, du juillet 1972 au 30 juin 1973

RESUME 369 RAPPORTS dams le domaine de la lecture publiés entre le ler juillet 1972 et le 30 juin 1973. Les rapports ont été répartis sous six rubriques principales dont quatre ont été subdivisées à leur tour. Comme par le passé, la majorité des études a été groupée sous 2 des 6 rubriques: la Physiologie et psychologie de lecture et l'Enseignement de la lecture. Sous la première se trouvent 3 sub-

The authors wish to express their appreciation to Beverly Farr, Jacqueln Stitt, Carol Greenfield, and Michael Rowls, each of whom helped in identifying and annotating a number of the articles appearing in this report. A special note of thanks is extended to P. Stanley Reed, an undergraduate student at Indiana University, who assisted in processing the materials. Support for the Annual Summary this year came primarily from IRA with additional funds contributed by Scott, Foresman and Company.

divisions qui embrassent le plus grand nombre des études publiées: l'Aptitude au langage et à la lecture, Facteurs touchant à l'inhabilité en lecture ainsi que Compréhensibilité et lisibilité. Sous l'Enseignement de la lecture, la subdivision ayant trait à l'Administration des tests est la plus nombreuse de toutes les subdivisions de cette rubrique. La plupart des études comprises sous l'enseigne de la Sociologie de la lecture se rapporte à l'analyse textuelle d'un choix de lectures. Une liste d'autres bibliographies et de comptes rendus sur la recherche en matière de lecture paraît comme la première catégorie principale de ce volume. Les comptes rendus ont été placés soit sous des catégories spécifiques soit sous la rubrique Etudes diverses. Une bibliographie annotée suit le texte écrit.

Resume 369 informes de investigatión de lectura publicados entre el 1° de Julio de 1972 y el 30 de Junio de 1973

SE EFECTUA UN RESUMEN de 369 informes sobre investigaciones realizadas en el campo de la lectura, publicados entre el 1-° de Julio de 1972 y el 30 de Junio de 1973. Los estudios de investigación se clasifican en 6 categorías principales, siendo 4 de ellas, a su vez, subclasificadas. Como en años anteriores, la mayoría de los estudios realizados se clasifican en 2 de las 6 categorías principales: la Fisiología y Psicología de la Lectura y la Enseñanza de la Lectura. Bajo la denominación de Fisiología y Psicología, 3 subdivisiones son las que contribuyen con el mayor número de estudios: Aptitudes para la Lectura y el Lenguaje, Factores Relacionados con la Inaptitud para la Lectura, y la Claridad y Legibilidad. Los estudios que figuran bajo la subclasificación de Enseñanza-Prueba, constituyen el mayor número de informes que aparecen en cualquiera de las subclasificaciones sobre la Enseñanza de la Lectura. La mayoría de los estudios efectuados en Sociología de la Lectura se refieren al análisis del contenido de diversos materiales. Como primera categoría principal del presente resumen, aparece una lista de otras bibliografías y reseñas realizadas en la investigación de la lectura. Las reseñas han sido clasificadas en subclasificaciones específicas o puestas bajo el subtítulo de Miscelánea. A continuación de la prueba escrita aparece una bibliografía comentada.

The volume of research in reading continues to be large. This year, as in the past several years, the number of investigations classified under the Physiology and Psychology of Reading is greater than that in any of the other areas. Continued interest in research related to test prediction and development is also reflected by the sizable number of reports appearing in that subcategory.

Readers again are referred to "Researchlight," a column in *The Reading Teacher*, as being of particular interest. In addition, brief reports of research are to be found in the "Research Report" column in *Elementary English*.

Each study abstracted in the text of this summary is followed by a number in parentheses which refers to the alphabetical annotated bibliography found after the text.

I. *Summaries of specific aspects of reading research*

This section lists published summaries of research, including annotated bibliographies, syntheses, and critical reviews. The summaries have been classified under topic headings whenever more than one article related to a single topic appears. The final category, Miscellaneous, contains single reviews on a given topic.

I-1 General summaries

Summary and review of investigations relating to reading, July 1, 1971 to June 30, 1972, by Otto *et al.* (253).

A review of the "Summary and review of investigations relating to reading" after forty-one years, by Smith and Otto (310).

A summary of research studies related to reading instruction in elementary education: 1970, by Sheldon (302).

A summary of research studies relating to language arts in elementary education: 1971, by Sheldon, Lashinger, and Carney (303).

Reading research: some notable findings, by Smith (311).

A review of selected research in language arts reported in 1971, by Smith (313).

Summary of investigations relating to reading, July 1, 1971, to June 30, 1972, by Weintraub, Robinson, Smith, and Plessas (355).

I-2 International studies

Cross-national comparisons of reading achievement, by Downing (78).

Sweden, [reading in], by Malmquist (209).

Japan, [reading in], by Sakamoto (291).

I-3 College-adult reading

1970 review of research on college-adult reading, by Bliesmer (29).

1971 review of research on college-adult reading, by Bliesmer (30).

Measuring outcomes in college reading programs, by Tillman (336).

I-4 Vision-visual perception

Training visual perceptual processes, by Hammill (129).

Vision-visual discrimination, by Weintraub (353).

A guide for improving visualized instruction, by Dwyer (81).

I-5 Prose learning

Language factors in learning mathematics, by Aiken (4).

The role of questions in maintaining attention to textual material, by Bull (41).

Ausubel's theory of meaningful verbal learning: implications for reading research, by Blanton and Tuinman (28).

A critical review of mathemagenic behaviors and the effect of questions upon the retention of prose materials, by Carver (51).

Aspects of research on prose learning applied to reading, by Cunningham (69).

The retention of connected discourse: a review, by Cunningham (70).

Experimental analysis of written instruction, by Johnson (163).

The mathemagenic effects of factual review questions on the learning of incidental information: a critical review, by Ladas (186).

Experiments on mathemagenic behavior and the technology of written instruction, by Rothkopf (288).

I-6 Literature and reading

Measuring growth in appreciation of literature, by Cooper (65).

Teaching literature to children, 1966-1972, by Cullinan (68).

I-7 Culturally different

The language experience approach for the culturally disadvantaged, by Hall (128).

Variables affecting achievement of middle school Mexican-American students, by Hernandez (139).

I-8 Miscellaneous

Cognitive style and reading behavior, by Blanton and Bullock (27).

Bibliography of vocabulary studies, by Dale, Razik, and Petty (73).

Psychometric research on comprehension in reading, by Davis (74).

Television and children's reading, by Feeley (94).

Dyslexia: problems of reading disabilities, by Goldberg and Schiffman (111).

Characteristics of secondary reading: 1940-1970, by Hill (141).

Intersensory transfer, perceptual shifting, modal preference, and reading, by Jones (166).

Is there really a *WISC* profile for poor readers? by Kender (172).

Speed reading in the seventies, by Miller (226).

Component processes in reading: a performance analysis, by Posner, Lewis, and Conrad (262).

He just thinks he can't read, by Quandt (268).

The development of a perceptual skills curriculum, by Rosner (285).

Success and failure in learning to read: a critique of the research, by Samuels (294).

Auditory perception and deafness, by Weintraub (352).

What research says about reading in the intermediate years, by Weintraub (354).

Results of the survey of the literature on methods and materials in reading, by Maxwell (212).

Skimming and scanning improvement: the needs, assumptions and knowledge base, by Maxwell (213).

II. Teacher preparation and practice

Goodacre (112) presented the second in a series of extensive reports all dealing with teaching beginning reading in Britain. The present phase dealt with the attitudes of teachers, their backgrounds, and the effect of these on the progress of pupils as they learned to read. In a personal questionnaire, information relative to teaching experience, social class origin and age of teachers was collected. Four questionnaires were used to collect data from teachers concerning their opinions, attitudes, and estimates of pupils' home conditions, attributes, and other characteristics. These were Initial Questionnaire, Home Background (General) form, Home Background (Individual) form, and Teacher's Personal Questionnaire. Estimates and predictions of pupils' readiness, attainment, and progress were collected from 2 rating forms filled in by teachers: Reading Readiness estimate and Primer Criterion. A standardized group test, the *NFER's National Survey 7+ Reading Attainment Test*, was administered to over 6,500 children in 139 schools. Social class data and organization were also collected on schools. The information reported is extensive and only selected highlights can be reported here. Generally, teachers felt that home background was an important factor in a pupil's learning to read. Teachers also tended to categorize pupils as coming from good or poor homes. In this rating, a school's social area was important; religious faith, parental help with school work, stable emotional school life, and a non-working mother were also regarded as most important. Teachers had relatively little contact with parents outside of the school but made judgments on a child's home on the basis of conversations, observations of personal belongings, type and quality of clothing, and class news period. Teachers in lower socioeconomic classes tended to see their classes as homogeneous groups both socially and intellectually. Findings suggested that teachers in extreme social areas (low) tended to have stereotypes about the pupils and the pupils' homes.

Roeder (282) analyzed the data received from 860 usable questionnaire responses sent to 4-year colleges and universities which offer courses in the teaching of reading and related reading methods courses. Although information was received from all 50 states, the article focused on California and Mississippi in particular. In California, questionnaires were returned by 50 of the 51 institutions meet-

ing the criteria for inclusion in the study. Data from California revealed that 4.5 per cent of the institutions required no reading course; 11.4 per cent combined instruction in reading with instruction in another course; about 39 per cent required 2 semester hours of course work in the teaching of reading; 40.9 per cent, 3 semester hours; and 4.5 per cent, 4 or more semester hours. In Mississippi, all schools required preservice teachers to complete at least 3 semester hours in the teaching of reading with 76.9 per cent requiring 4 or more hours. At the national level, 10 per cent of the institutions had no methods course requirement in reading, while 74.9 per cent required 3 semester hours or more. Also nationally, 32.3 per cent of the institutions required 3 or more semester hours of instruction in the language arts, 68 per cent required a course in children's literature, and 57.6 per cent did not require a tests and measurements course.

Singer (308) discussed the evaluation of a program to prepare reading content specialists for the junior high school level. A 2-year program was initiated in which the first year was spent in course work with some field experience in junior high schools. The second year involved internship-type experiences in 4 junior high schools. Four major approaches were used to teach reading to heterogeneous classes of seventh and eighth grade children: a project or theme method of teaching a unit; Herber's reading and reasoning guides; Moffett's techniques of group discussion, writing, paperbacks, role playing, and class plays; and cross ability teaching. The in-service specialists spent a third of their day consulting with other teachers. Data were collected from the reading content specialists classes as well as in control groups which had no special reading teachers. The *California Reading Achievement Test*, Junior High School Level; *Carter's California Study Methods Test*, and the *Athey-Holmes Reading Personality Scale* were administered. No statistically significant results were found for any of the criterion measures between experimental and control groups.

In a replication of an earlier study, Braam and Walker (34) asked teachers from 9 content areas, reading teachers, and principals to respond to a 6-item questionnaire. Three questions related to reading skills and asked for identification of those considered most necessary to read in a subject area, and for the reading skills in which students are most proficient and most deficient. Three other questions asked if there was a reading program at present in the school, if there was a reading specialist in the school, and if the respondent had ever received any instruction in the teaching of reading. According to

the responses, the most necessary reading skills, in order, were comprehension, vocabulary, reading rate, critical reading, and study skills. The ordering of the list differed somewhat from the findings of the previous survey in 1964. The content area teachers saw their students as most competent in comprehension, vocabulary, and locating information and as most of deficient in comprehension, vocabulary, rate, critical reading, and study skills. Reading teachers ranked deficiency in critical reading higher than did subject matter teachers. A total of 27 per cent of the content teachers replied that they had received some work in the teaching of reading. Only 41 per cent of the schools reported programs in reading; 42 per cent replied that there was a reading teacher or specialist on their faculty. The same figures for the earlier survey were 68 per cent and 73 per cent respectively.

An evaluation report of a preservice reading methods program was presented by Britton (37). The program featured large group lectures, on-site reading instruction with children, and individualized instruction for the college student. The program was rated by 66 of the 68 participating students as well as by 11 elementary faculty members of 2 schools. Students gave high or excellent ratings to the college instructor, the on-site practicum sessions, the reading notebook, and other aspects of the course. The elementary teachers gave generally high ratings to many parts of the course but felt that the objectives were not always clearly specified.

Guszak and Mills (123) described the evolution of an undergraduate reading education course from a lecture course to a communication skills block held in the schools. Evaluation data were reported on the progress of 85 children in grades 1-6 and the 23 kindergarten children who were taught by the preservice teachers. The 85 pupils had been reported by their classroom teachers as having serious problems in reading. The mean number of instructional hours given these children was 19.83, with a range from 15.25 to 23.83. Records maintained on the entry and exit instructional levels revealed that all children had made some progress with growth ranging from advancement from the preprimer to the primer level to that which showed a year's growth. At the kindergarten level, 21 children were reading at the end of the semester with an average of 16.25 sight words having been learned.

Pertz and Brown (257) reported post institute changes and growth of participants who had attended a 1967 NDEA institute in reading at the University of Chicago. A 15-item questionnaire was

sent to the 40 original participants, and replies were received from 34. Comparisons were made of various professional activities engaged in during the 4 years preceding the institute with those during the 4 years following attendance. The findings suggested that marked professional changes occurred as a result of institute attendance.

Koenke (182) reported an evaluation type of study that ascertained the effect toward teaching reading of 1) prestudent teaching course, 2) courses plus 6 weeks of student teaching, 3) extended student teaching as opposed to methods courses, and 4) experience. English majors in their senior year and English teachers attending reading instruction sessions at a convention were utilized as subjects. A 14-item attitude inventory was administered to 30 randomly chosen seniors prior to student teaching, 14 English seniors who were enrolled in a special program utilizing a semester of supervised teaching supported by relevant workshops and conferences as opposed to methods courses, and 30 randomly selected experienced English teachers attending a conference. An analysis of variance and *F* tests were completed, and it was found that the mean score of the experienced English teacher was significantly greater than the mean scores of the preservice teachers. Further analysis was run on the scores of the 30 preservice teachers before and after student teaching with a corresponding drop in attitude noted after student teaching. Based on these data, a course was developed which focused on several problems thought to be of importance to English teachers. The 14-item *Otto-Smith Reading Inventory* was administered to 24 seniors at the beginning and ending of the class. The mean attitude score was found to be significantly higher at the end of the semester than at the beginning.

Cameron-Jones and Reid (49) attempted to ascertain whether or not backward readers received more individual attention during remedial lessons than they and their classmates received during regular reading lessons. The 19 children studied ranged from 7-0 to 8-6 years of age. After determining that the remedial children had made greater gains over a period of 6 months than did their matched pairs, the investigators concentrated on the verbal behavior of teachers in remedial and regular classrooms. Backward readers received 2 types of instruction daily: the regular classroom instruction and a 40-minute daily remedial session in another room. An observation schedule was kept in both situations of 4 types of events: 1) teacher holding a conversation, 2) teacher giving an assignment, 3)

teacher making an assessment, and 4) teacher making some comparative statement about a pupil's work or progress. In addition, in each of these major events, it was noted whether the teacher was speaking to the whole class, a small group, or an individual pupil. In the remedial situation, the child received more individual attention through having more personal conversations with the teacher, being given his own personal assignments, and having his work assessed on an individual basis. Pupils received more comparative comments about their work in the remedial setting.

A questionnaire survey completed by 104 elementary principals was conducted in Georgia by Callaway and Jarvis (45) to determine 1) the type of reading program employed in their schools, 2) the supplementary materials used for reading instruction, 3) the types of equipment used, and 4) the methods used in selecting materials. Sixty-two per cent of the respondents indicated that the reading program of their school was a combination of 2 or more approaches with basal series as part of all but one of these programs. An additional 37 per cent listed a basal series as the program basic to their school. A wide variety of supplementary materials was reported used. Eighty-nine per cent of the schools had a central library, 60 per cent had classroom libraries, and several schools reported services furnished by regional libraries. Supplementary readers and basal series workbooks were in use in 88 per cent of the surveyed schools; 14 per cent used other workbooks. Packaged kits were used as supplementary materials in 75 per cent of the schools. Many types of equipment were available for teacher use in the schools to aid in reading instruction. The filmstrip projector and phonograph were the most frequently reported types of equipment. The tape recorder was reported available in 95 per cent of the schools and the overhead projector in 85 per cent. Textbook materials for basal reader instruction were selected by a system-wide committee composed of teachers and administrators in 80 per cent of the school systems. In 11 per cent of the schools, a teacher committee made the selection. Curriculum directors made the selection in 5 per cent of the sampled schools.

III. Sociology of reading

III-1 Use of mass media

In his report Atkin (9) described an experiement and 2 secondary analyses in which the use of news media was related to inter-

personal discussion of news events. One of the secondary analyses showed that the number of groups in which news was often discussed was significantly related to the number of newspapers read daily and to the amount of time spent reading newspapers and magazines. The second analysis showed that the frequency of discussing a political campaign related strongly with reading campaign coverage in the print media, viewing conventions and watching news and public affairs programing. In this experiment Atkin divided his subjects into 26 small "buzz groups," told one-third they would discuss national social problems, another third they would talk about local social problems, and the other students they would discuss school social problems. The subjects completed a questionnaire which included questions regarding media use. In general, the experiment showed strong receptivity to useful content but very little information search for additional information not asked for. The national groups did not read more news magazines nor watch significantly more newscasts than the other groups, but the total national news exposure was greater for the national group than the other groups. There were no differences in the number of newspapers read among the 3 groups.

The relationship between people's information and value systems was explored by Starck (318). The subjects were asked to arrange the 18 terminal items from the *Rokeach Value Survey* (such as a comfortable life, family security) in the order of importance to them as guiding principles in their lives and the 18 instrumental items from the same instrument (as ambitious, honest, obedient) in the order of their importance as modes of conduct in the interviewees' lives. They also ranked a list of 9 information sources in terms of importance in helping them achieve their personal and social goals. Included in the latter were 3 interpersonal sources: relatives and family, friends and acquaintances, and professional counselors (such as ministers); 5 mass media sources: books, newspapers, radio, television, and magazines; and a single source termed "public event" (such as a meeting). The interpersonal information sources were ranked as most important in helping the subjects achieve their value-prescribed goals. The per cents of those who preferred each medium were as follows: books, 12.7; newspapers, 8.3; television, 7.4; and magazines, 6.4. Print media (66.6 per cent) were preferred over electronic media (17.6 per cent). Subjects who rated a "comfortable life" high tended to prefer magazines over other sources; those who valued "world of beauty" tended to prefer

newspapers, magazines, books, and public events; and those valuing "pleasure" tended to prefer newspapers and public events.

In their investigation of the agenda-setting capacity of the mass media during the 1968 presidential campaign, McCombs and Shaw (215) determined the relationship of their subjects' perceptions of key issues of the campaign with the actual content of the media used by them during the campaign. In interviews, the subjects outlined the key issues of the campaign as they saw them, regardless of the content of the candidates' current statements. At the same time, the mass media serving the population of this study (television, newspapers, magazines) were content analyzed. A major finding of the content analysis was that a considerable amount of campaign news was devoted to the analysis of the campaign instead of a discussion of the major issues. The data revealed a strong relationship between the main campaign issues as depicted in the media and the judgments of the subjects as to the salience and importance of various campaign topics. Although the 3 presidential candidates emphasized different issues, the subjects' judgments appeared to reflect the composite of the mass media coverage.

The relationships between political behavior of people and the use of the various media for the 1968 presidential year were examined by Prisuta (265). In-depth personal interviews were conducted with a sample representative of the national electorate. A positive but somewhat low relationship was found between media exposure to political information and political behavior. The print media, especially newspapers, displayed consistently stronger relationships than broadcast media with political behavior, such as voter turnout, political information level (as perceived by both the subject and the interviewer), time of voting decision, interest level, and political involvement. Although newspapers displayed the strongest relationship, more people by a wide margin were exposed to television than any other medium.

To determine the impact of mass media upon the voting behavior of people during presidential elections, Robinson (280) analyzed responses to questions asked in interviews prior to and following the 1968 election. Specifically, he was interested in the relation between the voting behavior and media usage of voters. The percentages of the users of each medium perceiving that the medium had taken sides were as follows: newspapers, 50 per cent;

magazines, 29 per cent; television, 22 per cent; and radio, 18 per cent. Biased reporting, as seen by the subjects, favored, for the most part, the Republican candidate. In terms of voting behavior, far more people reported having voted for the candidate sponsored by the newspapers than by the other media even though they ranked television and radio as the most important and least biased sources of the 1968 campaign news. When other variables were controlled, it was estimated that a newspaper's perceived support of one candidate over another accounted for approximately a 6 per cent edge in vote for the candidate endorsed instead of for his opponent.

Stephens (322) explored the relationship between the use of mass media exposure on modernization among economically deprived people in Appalachia. The data from interviews showed no significant relationship of the level of exposure to newspapers, magazines, radio, and television with age, education, sources of income, "cosmopoliteness," and dogmatism; however, organizational participation and level of employment were strongly related to the level of media exposure. All subjects listened to the radio, but only a third were concerned with news or public affairs reporting. One third reported watching television, with 26.1 per cent of the sample watching newscasts. One of 10 subjects read news or public affairs items in the newspaper; a still smaller number read magazines. Stephens concluded that the attention given to mass media played an important role in the modernization process of his subjects; but the presence of particular demographic, economic, or social-psychological determinants of media exposure was not supported by the data.

To determine the extent to which mass media were utilized in Alaskan Eskimo villages, Harrison (133) used data and observations which he collected, comprehensive village surveys conducted by research assistants in one Indian and 2 Eskimo villages, and published accounts of anthropological fieldwork in Alaskan villages. Radio was the most extensively used and influential medium with virtually every household having at least one radio. Although radio programs had urban orientation, adaptations have been made in regard to the communication needs of rural residents. The exposure to printed materials (newspapers, newsletters, and magazines) was much less extensive than exposure to radio, primarily because of the poorly developed language skills of the villagers. Such magazines as *Life* and *Look*, however, were fairly popular. Only one weekly news-

paper, *Tundra Times*, met some of the communication needs of the Alaskan Eskimo. Movies were an important part of community entertainment, but television was virtually non-existent.

Two studies conducted in Lima, Peru, investigated the relationships between media exposure and knowledge of public affairs. McNelly and Molina (220) interviewed males who were heads of their households, the sample being stratified on the basis of economic level and dwelling density. The respondents were asked to identify photographs of 10 foreign leaders and to name the country of each as well as to respond to other questions about foreign countries and international organizations. A second group of questions was devoted to various aspects of media exposure, including frequency and duration of exposure to individual media and the types of content attended to. The results of multiple regression analysis revealed that international affairs information was distributed through the sample according to social stratification and communication characteristics. Stratification and media exposure measures were correlated substantially with the knowledge index. General exposure to newspapers, radio, and television related more closely to knowledge in the lower than in the upper socioeconomic stratum. The best predictors among the media exposure measures produced a higher multiple correlation with world affairs information in the lower than in the upper stratum.

In the second Peruvian study Bishop (24) investigated the relationship among the 3 variables: media use, political knowledge, and political orientation. Interviews were conducted with Peruvian males who were heads of their households. The subjects were selected by a multi-stage, stratified sampling procedure. At the time of the study, Lima had 5 major morning newspapers, each of which owned an afternoon tabloid; 2 television stations which broadcast 15-minute news programs at noon and in the evening; and 8 radio stations that provided news reports. The subjects of the study responded to an index of attitudinal and behavioral predictors of political information seeking; to questions pertaining to general media use and to political information seeking use of the media; to 46 questions measuring political knowledge of local, national, and international political affairs; and to questions concerned with democratic political orientation. Control variables were education, age, and interpersonal communication activity. Strong zero-order Pearsonian coefficients of correlation were found between the first 2 variables, information seeking predictors and media use, and the

third variable, political knowledge, even when the control variables were introduced. The coefficient of correlation between the 3 variables of predictors, media use, and political knowledge and democratic orientation was highly significant; from the regression model only political knowledge and education accounted for highly significant proportions of variance in democratic orientation; political information was about twice as powerful as education. Bishop concluded that the adult male in Lima may be able to compensate for lack of education by high media use to gain political knowledge.

Katz, Gurevitch, and Haas (170) analyzed the use of mass media by Israeli adults with respect to the perceived helpfulness of each medium in satisfying clusters of life needs. They first prepared a comprehensive list of psychological and social needs reported to be satisfied by mass media exposure and then clustered the needs into a classification scheme. The subjects were asked in interviews to indicate the extent to which each of the 5 media (radio, television, newspapers, books, and movies) helped in gratifying the needs and to assess the helpfulness of the media relative to other sources of need satisfaction. The principal findings include the following: for all needs examined, the combined non-media sources (friends, holidays, lectures, work) were deemed more gratifying than the mass media. For subjects who stated that governmental matters were important to them, newspapers were the most important medium, followed by radio and television. Books and film fell far behind. Needs related to self were associated with different kinds of media, depending on the specific functions involved. For example, knowing oneself was best served by books; enjoying oneself by films, television, and books; developing self confidence by the newspaper. In gratifying self needs, the better educated relied upon books, while the lesser educated used television. Television was considered useful for killing time but not as a medium of escape. Topics of conversation among relatives and friends were provided by newspapers and books.

The extent to which agreement on a specific community issue was related to exposure to different kinds of media content and the amount of media use was investigated by Tichenor and Wackman (335). Two kinds of agreement were explored: agreement between members of the general population and members of the community governmental structure about the official handling of the situation, labeled as support of officials concerning the facts of the situation as perceived by these people, termed *definitional agreement*. The

subjects were selected from a suburban community served by both suburban weekly newspapers and daily metropolitan papers. In this city an event occurred which involved at least 2 levels of government (local and state) and which was given heavy coverage by the newspapers and a major television station. The hypothesis that persons in the community whose exposure was limited primarily to metropolitan media would have less agreement with government officials on the conflict issue, compared with persons depending heavily upon local media, was sustained. The data from the surveys indicated general support for both aspects of agreement regarding local use, but the level of metropolitan media use was not related to either support or definitional agreement. Socioeconomic status, level of education, and length of residency were not related to the amount of agreement with officials. The level of knowledge about local public affairs was related to the amount of media use, especially newspaper reading.

The results of 2 coincident surveys in which the same news media preference questions were asked were reported by Cushing and Lemert (71). Telephone interviews were conducted with a sample of students drawn from a university student directory and with a sample of non-students whose names were randomly drawn from an area telephone directory. Both groups preferred newspapers and television as general news sources and newspapers for local news. Students selected magazines and people as preferred news sources more often than non-students did. Television was the most believable source of national and international news, with newspapers being the most believable source of local news for both groups. More non-students (80 per cent) than students (60 per cent) reported reading the local newspaper regularly.

From reported studies, Rosengren (284) analyzed the diffusion pattern of 8 hard news events. The variables considered were the event importance, rate and amount of diffusion, and sources from which news was first learned. Among the conclusions drawn from the study of the empirical data were the following: The more important an event is, the higher are the rate and the amount of diffusion of news. When the rate and amount of diffusion are high and the news is important, more people have learned about the news from personal communication than from the newspapers. More subjects learned the news through television than through radio, but the difference was not statistically significant.

III-2 Content analysis

More studies concerned with content analysis were located this year than in any of the other divisions in the sociology of reading. Interest was again shown in the roles of the female sex in different materials ranging from primary grade books to newspapers.

The roles, relationships, activities, and importance of male and female characters in 734 stories found in readiness and first and second grade readers of 4 basal series were studied by Frasher and Walker (102). They found that males were the main characters 3 times as often as females; adult males were seen in occupations outside the home in 196 stories and adult females in 52 stories; the fathers assumed the family leadership role in almost all stories with their activities taking place outdoors while the mothers remained indoors. Girls were more frequently shown in quiet play, boys in active games. Girls were often characterized as needing help and protection, but boys were described with such positive-striving qualities as leadership, independence, and bravery. After the foregoing analysis was completed, Frasher and Walker analyzed 2 new editions of basal readers. They concluded that the new editions had not changed the treatment of sex roles to present a more equal and realistic representation of female and male characters.

Women on Words and Images (361), a task force of the National Organization for Women, reported upon a content analysis of 134 elementary school readers of varied dates from 14 publishers. They found more boy-centered than girl-centered stories, more biographies of males than females, more male animal stories than female ones, and more male folk or fantasy stories than female ones. The task force found boys in the stories to have such characteristics as perseverance, initiative, creativity, cleverness, bravery, heroism, and the like; girls were passive, docile, and dependent. Adult role male models represented many active trades or professions; adult female characters were either career people or mothers, seldom both. The committee reported an absence in the readers of challenges or conflicts within real life situations, of girls excelling in anything, and of appreciation and protection of the natural environment.

Graebner (115) analyzed the newest basal readers of 2 series against their previous editions to determine if elementary reading books reflected a changing female role. Among her findings were the following: boys dominated the story texts and pictures in both new and old editions. Although women were underemployed when

compared to their rate of employment in the labor market, more varied kinds of employment were depicted in the new editions. From the analysis, Graebner concluded that basal readers are changing slightly with societal changes but still do not approach reality so far as women are concerned.

A sample of the winners and runners-up of the Caldecott Awards was surveyed to determine the roles played by male and female characters by Nilsen (242). Finding more male than female characters, she noted that all books had male characters, but 6 had no females, and approximately one-fourth had them in "token" roles. Women were pictured as looking on during the action, listening instead of talking, and smiling instead of complaining. Nilsen hypothesized about the reasons that females were characterized in placid roles in recent books.

Fifteen junior high school literature anthologies were analyzed by Wiik (358) to determine the number of authors, human major characters, and animal major characters, both male and female. Altogether 450 textbook literature selections were studied; these were written by 376 male and 94 female authors. The results of other male-female comparisons included the following: 411 male and 87 female human major characters; 29 male and one female animal characters. In addition to the low number of female characters, they were found to be low quality, stereotyped characters. Female authors appeared to be more able than male authors to conceptualize women in non-stereotyped roles.

Morris (233) analyzed 2 Los Angeles and 7 English newspapers to determine the extent of coverage of the feminist movement at time periods relatively early in the women's liberation movement. July, 1968, through June, 1969, and May, 1969, through July, 1970, were time periods selected for the Los Angeles and English papers respectively. News reports, articles, cartoons, letters, and features were coded if they contained any of the following key phrases: "women's liberation," "women's lib," "womlib," "feminists," "new feminists," or "militant" when it applied to women. Each item or part of an item was weighted according to its length. Little information concerning the women's liberation movement was found in either Los Angeles newspaper. The coverage of the movement by English mass circulation newspapers was also sparse except for the *Sunday Times*, which accounted for more than 40 per cent of the total coverage. Approximately one-half of the total coverage of the movement in English newspapers was concerned with the move-

ment in the United States and the remainder of Europe. To Morris, the evidence from this study suggested that newspapers tended to withhold information about the newly emerging women's liberation movement.

The roles of minority groups were investigated in a variety of sources. Kane (169) analyzed the textbook treatments of minority groups in four parts: 1) Jews, 2) minorities under Nazism, 3) black Americans, and 4) other minorities in America (American Indians, Oriental Americans, and Spanish-speaking Americans). Emphasis was on the information given about them in American History, world history, and governmental processes/social problems textbooks. For the purpose of comparability, the format used in the 1960 Anti-Defamation League textbook study was followed. A major part of the report was devoted to quotations from textbooks. Kane concluded that although there had been improvement in the presentation of topics related to minorities, the improvement was uneven. Many of the texts presented a principally white, Protestant, Anglo-Saxon point of view; only a few of the books presented a scholarly and fair portrayal of certain minority groups. No single book was judged as giving an adequate presentation of all topics analyzed in this study. Materials about Jews continued to over-emphasize their ancient past; the Nazi persecution of minorities and the contemporary role of other minority groups, such as the American Indian, were, for the most part, ignored; and the struggle by blacks for equality continued to be treated with generalizations instead of with facts.

Abel (1) listed, classified, and analyzed informational books related to Indian life which are appropriate for young children. Certain trends were noted in these books. Male characters were emphasized more than female ones; American Indians usually had brown skin, black hair, and wore traditional costumes; they lived in segregated living conditions on reservations; they took much pride in their ethnic culture and clung to traditional living patterns. Evidence of scholarly research was shown in many of the books since authors are either authorities in the field or have studied the subject matter in depth.

An assessment of the roles of minority group members in 98 stories written for children between the ages of 3 and 7 was made by Bernstein (21). She grouped the stories according to publication dates (1935-1950, 1951-1960, 1961-1965, and 1966-1970) and the presence of minority group pupils and teachers in the books. Of the 8

books published during the first period, 7 had all white characters. In contrast, 28 of the 41 stories published during the 1961-65 period included non-white characters, and 17 presented integrated classrooms. With few exceptions, the classroom teachers were Caucasians. All books showing completely black, completely Puerto Rican, or completely black and Puerto Rican were published since 1968.

Donaldson (77) examined the treatment of the black American in 9 elementary level geography textbooks; 9 university textbooks; a portion of the High School Geography Project; 20 years each of *The Geographical Review*, *Economic Geography*, and the *Annals of the Association of American Geographers;* 15 years of *The Journal of Geography;* and 5 years of *The Professional Geographer*. Donaldson concluded that the university level textbooks revealed uninformed and distorted scholarship and that the elementary texts were better in terms of information and, in one case, tone. Blacks were included in only certain chapters, such as those on slavery and civil rights; many examples of white racism and ignorance were found. Twenty-eight articles in 80 years were concerned about Afro-Americans. Donaldson concluded that, with a few notable exceptions, the field of geography was wholly inadequate in its treatment of black Americans; the tone of writing was described as bland. Since current geography does not accurately reflect the best findings of known scholarship about the blacks, the omissions and distortions help to perpetuate and intensify the pattern of racial discrimination in the United States.

An analysis of the manner in which 5 recently revised U.S. history textbooks dealt with blacks and the fight for human civil rights was conducted by Krug (184). The topics studied were limited to plantation slavery, abolitionism, slavery compromises, Lincoln and the issues of slavery, causes of the Civil War, the struggle for the abolition of slavery during the Civil War, blacks in the Union Army, Lincoln's and Johnson's plans for the reconstruction of the South, and the 1954 Supreme Court school desegregation decision. Criteria used in the analysis were the inclusion or exclusion of factual, available material on black history; the degree to which clichcs were repeated, old myths were perpetuated, and the use of new historical interpretations of events related to the story of the black minority in the United States were made; and the degree of commitment of the authors of textbooks to the moral values involved in the struggle for racial equality. From his in-depth analysis and interpretation of the

revised U.S. history textbooks, Krug concluded that although there had been improvement in the treatment of blacks, the writing in areas dealing with black community or affecting the blacks in the course of United States history still needs major improvement and major revisions. The foregoing was found to be especially true in regard to the treatment of slavery, abolitionism, the causes of the Civil War, the contribution of black soldiers to the Union victory, the entire period of reconstruction, the Jim Crow legislation, the place of Negro status and rights in the debate over imperialism between 1880 and 1910, and the civil rights movement. Specific suggestions for improvement of the presentation of the role of blacks were made for publishers and writers.

As a means of evaluating senior high school curricular materials related to Afro-American history, Zunino (369) developed a content outline which was based upon a synthesis of information from articles, research, and books on the topic. Curricular materials were compared with the content outline and judged on a 6-point rating scale, ranging from an accurate and thorough treatment of a particular topic to a completely distorted presentation of content. Specific criteria were established for each category in the rating scale. Findings were reported for each of the 20 areas in the content outline. In general, the analysis of the curricular materials revealed that many important topics were not adequately examined. Among the important omissions were discussions of significant forces and trends, their causes, and their effects. Many topics dealing with black achievements were omitted.

The presentation of blacks in selected American prose written between 1776 and 1863 was analyzed by Yellin (363). The first nonliterary selection she analyzed was Jefferson's *Notes on Virginia*, which interpreted life in the new world. Selected works of George Tucker, James Kirke Paulding, John Pendleton Kennedy, and William Gilmore Simms represented the plantation novels, which included a conventional, stereotype interpretation of the black man and polemics espousing slavery. For a period of 80 years the blacks were presented in only minor roles. Richard Hildreth, Harriet Beecher Stowe, and William Wells Brown gave the black more important roles in their abolitionist novels and criticized the system of slavery more severely than did the plantation novelists. Many of the abolitionist novels were based on slave narratives or autobiographies of fugitives who escaped from slavery. The works of Nat Turner and Martin Robison Delany represented the black insurrec-

tion. Yellin concluded her study with Herman Melville's "Benito Cereno," a literary response to the juxtaposition of the races in America published before the Emancipation Proclamation.

References to blacks in 2 Los Angeles newspapers, the *Times* and *Herald-Examiner*, during the period of 1892 to 1968 were analyzed by Johnson and Sears (164) to determine the extent and nature of black invisibility. Two measures were used to determine the extent of coverage: the number of news items referring to blacks per full page of news in the newspaper and the per cent of total news space devoted to blacks, excluding the advertising, sports, and comics sections. Each item was classified in subcategories of the following major categories: stereotypes, civil rights, interracial violence, and other. The results of the analysis revealed that for the period of 1892 to 1954 less than one per cent of the total news space was devoted to blacks, except for a brief period early in the nineteenth century, when racial strife was reported. Press coverage of blacks did not significantly increase during the period studied and was not representative of the growth of the black population in Los Angeles. The amount of coverage increased at the time of the Watts riots but returned rapidly to the pre-riot level by 1966. The content changed from stereotyped descriptions and activities of blacks to emphasis on racial conflicts. In general, it was suggested that press coverage has been largely unsympathetic to black grievances.

Laishley (187) analyzed the content of 150 issues of 15 British comics to determine the extent to which non-white characters appeared in them, how they were presented, and the impressions given in stories of life in non-white countries. The materials analyzed included 3 comics for younger children, 5 for girls of pre- and early adolescence, 5 for boys of pre- and early adolescence, and 2 teenage girls' magazines. Non-white characters appeared in only 20 stories; one non-white character was found in 8 stories; more than one appeared in 4 stories. Eight of the 20 stories treated these characters in an unfavorable manner; 3 included both favorable and unfavorable characters; in 3 stories non-whites were treated as stereotypes. The non-white characters in the comics for younger children were treated in an over simplified manner. The comics did not reflect accurate and balanced pictures in stories taking place elsewhere. Laishley concluded that the characters in the comics did not reflect the multi-racial and multi-cultural nature of Great Britain, the school population, or the reader of the comics.

A content analysis of Egyptian children's stories selected from basal readers of 1967, short stories from the middle 50's , and folk tales of the early 20's was performed by Beshai (22). The investigator's purpose was to compare the themes for achievement, affiliation, power, and moral teaching in the stories of 3 periods of educational development and reform in Egypt. The results of his analysis showed a significant increase in achievement imagery during the educational period represented in the basal readers when compared with the stories of the other 2 periods. No significant differences were found in the incidence of achievement imagery and power imagery in all stories, but moral teaching incidences were significantly higher than those of achievement. There were also no significant differences in the incidences of affiliation imagery, achievement and power, and moral teaching in all stories.

Callahan and Passi (44) reported on a study completed by Passi, who focused her analysis upon cognitive processes found in 3 elementary school textbook series (grade levels 3-6). She used a taxonomy previously developed which included 7 classification levels: knowing, translating, manipulating, choosing, analyzing, synthesizing, and evaluating. A random sampling of pages in each textbook was used in the analysis. More than half of the cognitive activities were classified at the manipulative level, with the newer series seeming to have fewer activities in this classification than the older ones. There was not a very high proportion of activities classified as translation. The newer series had proportionally more items classified in the knowledge classification than the older series. The textbooks analyzed did not tend to foster intellectual activities classified as analysis, synthesis, and evaluation.

The purpose of a content analysis of Urch (342) was to ascertain the treatment of the non-Western world in secondary social studies textbooks and to provide an objective measure of the quality of that treatment. To determine the quality of the treatment, the following criteria were established to ascertain whether the books helped students develop the capacity to make normative judgments of non-Western countries: variations of cultures on a continent, cultural patterns which distinguish one group from another, social transitions currently taking place, value orientation of non-Western people, and the negative and positive impact of Western influences. Detrimental descriptions to the reader's understanding of the non-Western world, such as descriptions of problems without an attempted explanation of the problems or descriptions of a society's attempt

to imitate the West without reasons, were noted. Among the results of the investigation were the following: the superiority of the Western culture over any other was stressed; much description and factual information were included without explanations to make the facts meaningful; Asia and Africa were often described as entities rather than a group of diverse cultural areas. World-mindedness appeared not to be promoted.

The purposes of a study by Peiser (256) were to determine whether one area of United States history, Populism and the Populists, was accurately presented in 9 widely used current American history high school textbooks and to devise a system that could be used to make such a determination in any history book. Scholarly accuracy, absence of oversimplification, tentativeness of conclusions presented, extent to which problem solving by the student is involved, and the inclusion of controversy were all considered. The investigator prepared a general outline of topics based upon the literature dealing with Populism, which was checked for accuracy by 3 resource people in the field. Each of the 104 items in the outline was analyzed for quantity and tone of treatment by means of a code for semantic content analysis developed by Peiser. He found that the texts resembled each other by including approximately the same amount of material on Populism and by including certain aspects of Populism while omitting others. They reflected similar value judgments by treating certain aspects of the period favorably and others unfavorably. Controversial, negative, and complex issues were either omitted or treated lightly.

A study by Flack (97) was concerned with the type and scope of treatment given to international educational and cultural relations (IEC) in 171 textbooks on foreign policy, international relations or politics, and international organizations published in the United States between 1945 and mid-1971. Between 1966 and mid-1971, more textbooks in the specified fields were published than in the preceding 2 decades. Of the textbooks analyzed, 45 per cent included pertinent IEC information. The highest composite percentage of IEC content occurred in textbooks published between 1945 and 1960, not in those published in the most recent period; therefore, during the 27 year period the percentage of books dealing with IEC tended to decrease. In the 77 books containing IEC information, the average total percentage of book space devoted to the topic was 1.3 per cent; however, almost 43 per cent of these books devoted less than 0.5 per cent of their space to IEC matters. IEC

content presented cultural diplomacy as relating to the gaining or exercise of power, influence, or propaganda; to peace and international understanding; or to the establishment of links and cooperation. Flack concluded that in the textbooks analyzed, less than adequate treatment was given to foreign policy process and organization, to international relationships and politics, and to the work of international organizations.

A content analysis of newspaper items, (letters to the editor, editorials, and general news items), sociological research and sociology course titles, and reviews of novels associated with Chicago during the years of 1910 to 1930 was conducted by Schwartz (298) to determine the nature and extent of social problems awareness manifested in print. Data were collected on the awareness shown concerning 18 social problems. Although considerable awareness of social problems was manifested in the different kinds of sources, little similarity was found in the kinds of social problems emphasized. Newspapers focused upon the social problems of crime, political corruption, unemployment, public welfare, and racial inequality; sociological research was concerned with general social problems, racial and ethnic inequality, public welfare problems, and family disorganization; the novels focused upon family disorganization, poverty/pauperism, and organized crime. No evidence was found concerning a shift from newspapers and creative literature to sociological research as the primary source of fundamental criticism or an increase in social problems awareness in modern society.

Other content analysis studies were also conducted in which newspapers were the principal source. The content of news reports described as interpretive was compared with that of spot news by DeMott (75) to determine the chief difference between the 2 kinds of reporting. Outstanding examples of interpretive reporting were solicited from large daily newspapers throughout the United States; the news reports were obtained from the front pages of the same papers in which the selected interpretive reports were found. Each report was analyzed for its type or character, literary style, general subject matter, and affective nature. Interpretive reports were found to be much longer and included more personal opinion than did spot news, and were more likely to be concerned with social problems or events considered to be "soft" than with "hard" or "breaking" news. Interpretive news reports were more likely than other news reports to contain extensive background information,

exposition, and descriptions of persons and places. An overwhelming majority of all news reports was classified as negative rather than positive.

In his discussion and interpretation of the high school underground press, Heussenstamm (140) included a report of a content analysis of the complete, 18-months file of *The Loudmouth*, a parody on a regular school paper, *The Loudspeaker*. The results of the analysis revealed a radically critical attitude toward many established high school policies and practices, a commitment of high school students to the ideals of a more democratic society, and an involvement with significant political and social movements in the culture as a whole.

The foreign news coverage of 2 newspapers in Ceylon (*Ceylon Daily News*) and Taiwan (*Central Daily News*) was analyzed by Liu and Gunaratne (200). Since the *Central Daily News* gave little attention to news from Communist countries except China, the investigators concluded that this Chinese-language newspaper reflected the anti-Communist approach of the Nationalist Chinese Government. Much of its foreign news was concerned with the United States and Japan. The *Ceylon Daily News* had a more balanced approach than the Taiwan paper in regard to the presentation of foreign news coming from the 2 world power blocs. The proportion of foreign news presented in the *Central Daily News* was relatively low when compared to that of the *Ceylon Daily News*.

Foreign news reports in 2 newspapers from the United States, *The New York Times* and the *Philadelphia Inquirer*, and in 2 newspapers from India, the *Times of India* and the *Malayala Manorama*, were analyzed by Vilanilam (349). His content analysis was limited to news stories sent by foreign correspondents over the wire services and news received through international news agencies. The results showed that *The New York Times* devoted 20 per cent of its print area to foreign news and the *Philadelphia Inquirer*, 16 per cent. The *Times of India* and the *Malayala Manorama* gave 25 per cent and 39 per cent respectively of their news space to foreign news. There was no substantial difference in the amount of space devoted to the reporting of foreign news in the 2 time periods studied. Both newspapers from the United States devoted more space to news from Western Europe than from any other part of the world. The Indian newspapers allotted a much higher percentage of space to their foreign news of the United States than the 2 American newspapers devoted to stories about India.

Elder (83) analyzed 744 lessons in Indian language textbooks representing 2 periods of time, 1962-63 and 1970-71, and 2 Indian cultures, the Hindi and the Tamil. He found the colonial period had been de-emphasized but that the precolonial and post independence periods were stressed. The Hindi precolonial heroes tended to be political, whereas the Tamil ones were scholars. Hindi villains were religiously intolerant, fearful, and selfish; the Tamil ones were the unlearned or those disrespectful of the learned. When western culture was introduced, the Hindi heroes directed their activities against the West; the Tamil textbooks, stressing cultural heroes, could include heroes from the West more easily than the Hindi ones could. Little evidence was found from the textbooks concerning India's post independence relations with the West. Comments interspersed throughout the materials appeared to express 2 themes: the responsibility of the West for the lingering difficulties in India, the seeking of approval by the Indians from the West, and the West as a model for both technical and social progress.

The content of magazines was analyzed in different ways in at least 4 studies. Sorenson and Sorenson (314) compared the science and technology content of magazines in 1969-70 with that reported in an earlier study for the years 1964-65. The same magazines, with the exception of the *Saturday Evening Post*, were analyzed in both studies. In addition, the investigators determined the space measurements of science/technology content in *Time* magazine for both time periods. The subject matter was classified under the following categories: space, automation/cybernetics, science, nuclear energy, and medicine. The number of science/technology articles in the 1969-70 period was 83 per cent greater than in 1964-65; the number of articles was greater in all categories except for medicine. A marked increase in the number of articles in conservation and engineering, which were among the subcategories of the science division, was noted. Only a slight increase in the average length of the articles analyzed in *Time* was found.

Selected issues of the *Ladies' Home Journal* were analyzed quantitatively and qualitatively by Zube (368) to note discernible shifts in the expression of certain value orientations. In the quantitative analysis, articles were coded under temporal orientation (past, present, and future) and activity orientation (doing, being in becoming, and being). The shifts noted in value orientations were from the *future* to the *present* and from *doing* to *being*. Few articles at either time period were concerned with the past. The qualita-

tive analysis supported the quantitative findings and provided descriptions of the behavior changes which accompanied the observed value-orientation shifts. The following trends were noted: ideas of morality changed from a rather inflexible set of standards to a more fluid concept which each person defined for himself; psychological explanations for understanding behaviors were increasingly used to justify behaviors; and the importance of mental health gave way to concerns of psychological adjustments for individuals.

The contents of *Adult Education* were analyzed by Dickinson and Russell (76) to determine trends and patterns of the articles as indications of the development of the discipline of adult education. Data regarding space, type and subject of the articles, citation practices, authorship, and a detailed analysis of research articles were summarized for volumes by 5-year intervals. During the period studied, 1950 to 1970, there was an increase in the number of pages per issue of *Adult Education*, articles about adult learning characteristics, authors affiliated with a university, and researched-based articles, with a decreased emphasis on program descriptions and statements of personal belief or experience.

The contents of a sample of book reviews which appeared in the *American Journal of Sociology*, *American Sociological Review*, and *Social Forces* during a 20-year period were analyzed by Champion and Morris (53). The purpose of their analysis was to determine if there were patterns concerning the affective nature of criticisms (positive, negative, or neutral) the types of criticism emphasized, and the academic and regional affiliations of reviewers. More than two-thirds of the book reviews surveyed were positive. Approximately one-third of all reviews contained no discernible criticisms of theory, methodology, or substance. The most frequent criticisms were concerned with the substance of the reviews. The regionality of the book reviewers was found to be biased for 2 of the journals since they were regional in origin and tended to cater to selected segments of the population. Since 1970, no regional bias was found in the third journal.

III-3 Readability of printed sources

A readability assessment of the 29 most frequently used books in Tennessee's Adult Basic Education classes was made by Rakes (269) to determine the relationships among selected readability indices: teacher judgment, publisher's estimate, Dale-Chall Readability Formula score, Fry's Readability Graph estimate, and the Gun-

ning Fog Index of Readability. A random sampling of 43 adult basic education teachers were asked to estimate the readability level of passages selected from the materials. A significant difference was found between the publisher-suggested readability levels and the other indices with all, except the Fry Readability Graph, exceeding the publisher's readability level suggestions. The Fry estimate consistently underrated the materials when compared to publishers' estimates. A significant difference was also found between teacher estimates of readability and the Dale-Chall, Fry, and the Gunning Fog indices with the formulas yielding higher levels than the teachers' ratings. A significant difference among the formula indices was found for 31 per cent of the passage analyzed. Low coefficients of correlation were reported for the 3 formulas. The teachers' ratings in this study were not in frequent agreement with formula or publisher ratings.

A significant difference of readability levels of front page metropolitan and non-metropolitan newspapers was found by Razik (276), with metropolitan newspapers being easier to read than non-metropolitan ones. Six articles were randomly selected from the front pages of each of 100 newspapers after they had been classified into categories dealing with such topics as crime, Cuba, economy, international, tragedy, space, political, and weather. One 100-word sample was randomly taken from each of the 600 articles for analysis with the Dale-Chall formula. The metropolitan newspaper was written at an easier level than the non-metropolitan paper. No significant differences between Associated Press metropolitan and non-metropolitan articles was found, but there was a difference in the United Press International articles with the non-metropolitan articles being more difficult than the metropolitan ones. Articles pertaining to the economy, space, international news, and state and national non-political news were written at the eleventh to twelfth grade levels; articles concerning crime, Cuba, features, local news, national political news, tragedy, and weather were at or below the ninth to tenth grade levels. In the non-metropolitan newspaper, articles about weather, tragedy, local news, and features were the only ones written at or below the ninth to tenth grade levels.

Gutman (126) used the tachistoscope to determine the difference between rapid perceivers and slower perceivers in the amount they see over a given length of time. Four outdoor ads were used. Two had illustration or copy placed either on the left or right side of the ad, and 2 had them placed on the top or bottom position within

the ad. Two of the ads were familiar, and 2 were unfamiliar. Each subject was given 2 separate tests presented at various threshold speeds. One test called for identification of geometric figures; the second consisted of objects. Each respondent saw all 4 ads in each of the 4 positions for 0.5 seconds. He was questioned immediately following each ad about which of the following was noticed first: advertiser's name, copy points, or illustration elements. In general, subjects tended to fixate on the illustration first regardless of position. Top-bottom ads had a higher percentage of subjects who reported seeing the illustration first than did right-left ads. In general, subjects with lower thresholds (faster perceivers) perceived more than did the other subjects. Respondents with slower threshold speeds did not notice fewer elements in the ads, however. Organization of elements within an ad appeared to affect perception.

III-4 Reading interests, preferences, and habits

As a result of a Q factor analysis of teenager's ratings of comic strips, Van Tubergen and Friedland (345) identified 5 patterns of preferences. The subjects were 11 males and 13 females, ages 14 to 19, from the New York City area. The 30 strips were selected as representative of a wide variety of comic strips. The first type of reader identified was typified by older teenage girls who preferred strips containing light-hearted social commentary and those with characters drawn in an unrealistic way and who rejected serial adventures. Type 2 included younger teenage girls who showed a strong preference for strips with female central characters and rejected masculine ones. These readers tended to prefer serialized stories and to reject one-time strips more than the other types did. Four boys and one girl formed Type 3; they appeared to prefer humorous strips with strong male central characters whose focus was to solve personal problems. This type rejected more serious strips and those featuring female leads. The fourth type was composed of both boys and girls and was characterized by diffuse preferences with no element seeming to dominate. The fifth type preferred strips that tended to comment on human relations and to present as central characters children who were wise beyond their years. One strip, *Rex Morgan*, was rejected by all types, while all subjects reacted neutrally to *Nancy*, *Beetle Bailey* and *Half Hitch*.

University undergraduates preferred humor comic strips to adventure strips, according to Stevens (324). Of 12 popular strips,

the 5 most popular were, in order of preference, *Peanuts*, *BC*, *Beetle Bailey*, *Blondie*, and *Wizard of Id*. Male and female subjects differed in the amount of comic strip reading with males reading more comics than females, but they did not differ in their preferences for the strips. There was little agreement about whether any given strip was amusing.

Justin (168) examined the cultural similarities and differences between Anglos and Mexican-Americans in regard to media reading habits with special emphasis on time orientation and amount of reading done. The subjects were males, 209 Anglo and 168 Mexican-American high school seniors. The instrument was a questionnaire with 2 parts originally developed for use with American Indians and modified for the present study. The reliability of Part 1 was .99 and of Part 2, .87. The results showed substantial differences between the 2 groups in feelings of personal control and delayed gratification. Of special interest here are the results dealing with media reading habits. The Anglos reported that 45 per cent read the newspaper every day, and 38 per cent of Chicanos responded the same way. An equal proportion, 46 per cent, of both groups said that they read magazines once or twice a week. Frequent reading of books was claimed by 37 per cent of Anglos and 19 per cent of Chicanos. More than a third of both groups stated that they rarely read books. There was considerable difference in TV viewing reported by the 2 groups: 24 per cent of Anglos and 6 per cent of Chicanos marked "very seldom" for TV viewing.

College students attending 2 different reading laboratories listed books they had read during the previous few months in a study by Adams (3). The most frequently mentioned books by black students in a southern university were *Manchild in the Promised Land*, *Soul on Ice*, *Autobiography of Malcolm X*, and *Black Boy*. White students in a northern university most frequently listed *Airport; Coffee, Tea, or Me; Catch-22*; and *Soul on Ice*. Seven books were common to both lists and comprised approximately one-third of the 25 most frequently mentioned titles. Adams concluded that the most frequently mentioned titles by white students dealt with real problems faced by people and with romance; fiction was more popular than non-fiction with these students. Although the black list was predominately racial in nature, the blacks were also interested in a search for identity, love and romance, and religious and current problems.

An interview survey of new readers living in ghetto areas of 5 large cities in the United States revealed that all respondents watched television; 95 percent listened to the radio; 93 per cent read newspapers, with half of these readers reading the newspaper every day; 88 per cent read magazines; and 69 per cent read books. Lyman (206) found the most popular magazines were *Life*, *Look*, *Ebony*, *Jet*, *Reader's Digest*, and women's magazines. The favorite magazine stories were concerned with the lives of real people, adventure, crime, mystery, travel, and romance. Book readers reported reading 2 to 5 books within the past 6 months, including a wide range of topics. Although there was diversity of reading interests, the 3 most popular titles were *The Autobiography of Malcolm X*, *Soul on Ice*, and the *Bible*. Half of the 33 books most frequently reported being read were concerned with black literature and biography.

The reading interests of black and Puerto Rican inner city high school students were investigated by Liebler (197). The subjects were eleventh and twelfth grade students from the upper 2 tracks (academic and college bound) of a 4-track English program. The subjects indicated in a questionnaire which of 11 areas they enjoyed reading and which books were most important to them. Puerto Rican male high school students liked to read books in the following categories: detective and mystery; adventure, war, and sea; humor; and sports. The Puerto Rican female subjects liked love and romance and humorous books. The reading interests of Puerto Rican boys and girls differed greatly with humor being the only common category in which both expressed much interest. Black male and female subjects were interested in biographies, especially those about black people. Black female subjects also enjoyed romance and love, humor, and biography. Male blacks did not show extreme likes or dislikes except in the area of biography. Puerto Ricans showed more interest than blacks in detective and mystery; adventure, war, and sea; humor; and sports. Black students expressed more interest than Puerto Rican students in poetry, biography, and current national and world problems. The books considered to be the most significant by the subjects in this study were *Love Story*, *Down These Mean Streets*, *Black Boy*, *Manchild in the Promised Land*, *Catcher in the Rye*, and *1984*. Although the subjects had unique reading interests, certain groups of students had similar interests. The differences were attributed more to sex than ethnicity.

IV. Physiology and psychology of reading

Many investigations in these areas are intended to throw light on the reading process and on factors influencing it. Subsections dealing with language, interpretation, and readability include the largest proportion of studies. Many continue to deal with reading disability, particularly attempting to identify underlying factors.

In an attempt to bring together what is known about the reading process, Seymour (299) developed a model for reading, as well as for naming and comparison. He began with Morton's logogen model of word recognition, then elaborated it by including separate access and exit channels for verbal and pictorial stimuli. Another channel was added for alteration of the content in the semantic system to accommodate superordinate naming and congruence judgments.

IV-1 Physiology of reading

A review of the literature by Wark, Tostenrud, and Nelms (350) suggested 2 reasons for research relating heart rate to reading. The first was methodological, and the second was clinical. The heart rate was determined by a Medtronic Digital Cardiotachometer which reported time between R-wave spikes and converted the time to beats per minute. Four volunteer subjects read cards for the Reading Eye Test. Two were told that no questions would be asked; the other 2 expected questions. Rest periods provided base data. The results showed that under the no-question condition, the heart rate decelerated from the base. However, under the question condition, 15 of 16 differences were positive, showing acceleration of heart rate. Differences between the 2 conditions were significant (.001). Correct answers to the questions were almost maximum. The results support the expectation of the investigators and suggest other problems to be solved.

Hunter, Johnson, and Keefe (148) compared readers to non-readers with respect to physiological orienting response patterns in the autonomic nervous system, particularly the electrodermal and cardiovascular onset, offset, and anticipatory responses to repeated stimuli in series. The subjects were 20 children referred to a reading clinic with normal intelligence and without neurological or psychological deficits. The 20 controls were matched for age, sex, race, IQ, and socioeconomic status. Most subjects were in fourth or fifth grades. Preliminary screening included psychological and neurological screening, parental questionnaires and behavior

ratings. Tests given were the *Wechsler Intelligence Scale for Children (WISC)*, the *Wide Range Achievement Test*, the *Bender Visual Gestalt Test*, the *Draw-a-Man Test*, the *Wepman Auditory Discrimination Test*, and a test of "handedness." Experimental procedures included the habituation series, a reaction time series, and an auditory threshold series. Autonomic responses were recorded continuously on a 12-channel Offner Type R Dynograph. The findings showed no significant differences in auditory thresholds, but controls were consistently (.001) faster in reaction times. Retarded readers showed lower (.001) mean levels of skin conduction and skin resistance on trial 1. However, controls showed significantly (.01) more electrodermal offset responses across 15 trials; skin potential responses did not discriminate between groups, but controls gave significantly more negative skin potential responses. Both groups were equivalent in monophasic skin potential onset responses, but diphasic ones were more numerous among controls. Significantly fewer electrodermal anticipatory responses were shown by the retardates early in the series, but no differences occurred later. Basal heart rate was equivalent in the 2 groups and increased over the 15 habituation trials. Anticipatory heart rate responses were significantly (.01) higher for controls, suggesting that retardates lack specific arousal necessary for sustained attention. Pooling the 2 groups, significant coefficients of correlation were found between reading ability and 1) motor reaction time ($r=-.31$), 2) skin resistance amplitude to a novel stimulus ($r=-.50$), and 3) degree of sinus arrhythmia ($r=-.55$).

Two studies dealt with visual field differences. Carmon, Nachshon, Isseroff, and Kleiner (48) carried on 3 experiments to determine whether visual speed superiority in one hemifield is related to direction of reading. The stimuli were Hebrew letters, each of which appeared on the right and left sides of the fixation target. In Experiment 1, 28 slides were exposed to one visual field only, and subjects were told on which side they would appear. Letters identified erroneously were reexposed at the end of the session. Five Israeli-born students were subjects. A total of 672 reaction times were recorded for each subject. Results showed no significant effects of visual field on reaction time, and practice by field interaction was not significant. In the second experiment, 6 subjects similar to those used in the first experiment were not informed concerning the side on which the targets would appear. A total of 936 reaction times were recorded. Significant differences (.001) were found with

shorter reaction times in the right field. The third experiment differed from the second only by a reduction of interstimulus time from 8.5 seconds to 4 seconds. Not only mean reaction times but total distributions were compared. The computer made the results available immediately. Reactions were shorter in the right field by 29 milliseconds, a significant (.025) difference. Also, the entire distribution of right-field reaction times was shorter. Differences were explained not only by cerebral dominance but also by differential attentiveness.

McKeever and Gill (218) used vertically spelled words and single letters as targets to test hemifield reaction times to eliminate scanning habits for horizontal words. Fifteen undergraduates viewed the vertical words bilaterally, which were the same words as those presented horizontally in a previous study. Bilateral letters were viewed by 26 subjects, all right handed with no detectable visual problems. Letter-pairs were set up so that each appeared twice in each half-field. Inter-trial interval was about 10 seconds. A number appeared in the central fixation point and was reported along with letters or words. Scores were the number of correct words, or letters when they were used. The results showed 44 words of a possible 300 recognized in the right and 20 in the left visual fields. The difference was significant (.05). Also, 10 subjects recognized more words in the right, while 4 recognized more in the left visual fields. Likewise, letter recognition was significantly higher (.025) in the right compared to the left visual field. The findings showed that horizontal sequence is not a requisite to right visual field superiority.

Galante, Flye, and Stephens (107) made a longitudinal study over 7 years of the physical factors related to reading achievement. The study began with 114 children in kindergarten. The data are presented on 71 who remained at the end of the sixth year of elementary school. Birth history came from the mother, attending physician, and hospital records. A questionnaire was filled in dealing with family constellation, accidents, operations, allergies, and current medication. Data were secured from the first physical examination by the family physician. Ophthalmological examinations were done every 18 to 24 months, as were audiological and neurological screening. An electroencephalogram (EEG), was done when subjects were in the last half of second grade and rated on a 4-point scale by a neurologist. Dominance tests and psychiatric evaluation were given at 2-year intervals. The *Stanford-Binet Intelligence*

Test was given in the third year and the *Wechsler Intelligence Scale for Children (WISC)* in the sixth year. Expectancy for reading was calculated on the basis of a weighting of mental age and chronological age, then compared to an average of the Word Meaning and Paragraph Meaning subtests on the *Stanford Achievement Test.* Thus each physical finding and combinations of them could be checked as predictors of reading achievement among the groups. Group A, 22 underachievers, was subdivided into A_1, 7 underachieving 2 or more years, and A_2, 15 underachieving but not retarded readers. Group B was composed of 26 children achieving at expectancy, and Group C, 23 pupils, achieving beyond expectancy. The following occurred with equal frequency in each group: abnormal EEG, allergies, accidents, and special medication. Hearing was normal for all except one child. A child's physical size, organicity, kindergarten teacher, mixed dominance, and eye problems were not predictive of grade 6 performance. An unusual birth history was found in 4 of 7 in Group A_1, and 9 of 22 in Group A, but in only 7 of 49 pupils in Groups B and C. Of the 11 children having signs of organicity on the EEG, 7 had higher Performance than Verbal scores on the *WISC* raising doubt that children diagnosed as organic do better on performance tasks than on Verbal tasks. Neither low scores on the Coding subtest, nor variability of the subtest scores on the *WISC* distinguished the groups. Characteristics more prominent in Group A were 6 or more months below MA at the end of kindergarten on the Spatial Relations subtest of the SRA Primary Mental Abilities Test, and eye muscle imbalance compensated for by good fusion. The conclusion was reached that an accumulation of minor deficits distinguished Group A and not Groups B and C, but that no single factor could be identified.

Fudin and Kenny (104) investigated the relationship between recognition of letters in the right and left visual fields, between halves of the arrays of 6 letters, and recognition at 3 displacement distances from fixation in each hemifield. Capital letters composed the 36 different arrays, 12 for each displacement. In each subset, a letter appeared once in each of the array-positions. The mean recognition score for letters in the right field (13.87) was significantly (.001) superior to that of the left field. Furthermore, more letters in the left array-half were identified when exposed in the right than in the left field while insignificant differences were found for letters in the right array-half. Error curves for letters exposed at each displacement distance were quite similar for the left and for the right

visual field. Errors in the right field increased steadily from the left across the display while in the right field the number of errors for the 2 array-halves were nearly equal. The findings are explained by scanning habits and differences in time to go from fixation to the left side of the array.

IV-2 Intellectual abilities and reading

Lohnes and Gray (203) did statistical reexamination of some of the second grade test scores obtained in the USOE *First Grade Cooperative Studies*. A card deck with 19 test scores for 3,956 pupils from 229 classrooms in 10 schools was the source of data. The readiness tests included the *Pintner-Cunningham General Abilities Test*, *Murphy-Durrell Phonemes*, *Murphy-Durrell Letter Names*, *Murphy-Durrell Learning Rate*, *Thurstone Pattern Copying*, *Thurstone Identical Forms*, *Metropolitan Word Meaning*, and *Metropolitan Listening*. Achievement was measured by the *Stanford Achievement Battery*, 5 scores from the end of first grade and 6 from the end of second grade (Social Studies and Arithmetic Concepts subtests omitted). The correlations among sex and project means were eliminated, even though the resultant *g* factor would be minimized. The resulting matrix of 171 intercorrelations among test residuals was submitted to principal component analysis. The *g* factor accounted for 53 per cent of the generalized variance. Highest loadings on this factor among the readiness tests were the Pintner-Cunningham (.73), the Phonemes (.71), and Letter Names (.72). Except for the Arithmetic subtest, all loadings of the achievement batteries equalled or exceeded .75 with 6 in the range of .81 to .87. A small second factor accounted for 7.7 per cent of the variance. All of the readiness tests loaded negatively on this factor, the highest (-.51) being Listening. Except for Vocabulary at grade 1 (read to pupils), all achievement subtests loaded, positively but low, ranging from .08 to .36. The 2-factor model accounted for 60 per cent of the generalized variance in the test residuals. A second analysis was canonical correlation analysis of the relations between readiness and achievement tests. The most predictable criterion factor correlated .81 with the best predictor. The *g* factor of the readiness battery accounted for 45 per cent of the generalized variance in the battery with highest loading on the Pintner-Cunningham. On the achievement battery, the *g* factor accounted for 62 per cent of the generalized variance, with highest loading on

the subtest Vocabulary and only slightly lower loadings on subtests Word Reading or Word Meaning and Paragraph Meaning. The loadings varied from .80 to .87. The correlation between the *g* factor and the other factor was .31. The major implication is that to understand reading one must understand intelligence. This implication did not appear in the original reports of the USOE studies.

Jerrolds, Callaway, and Gwaltney (157) examined the validity of the *Slosson Intelligence Test (SIT)*, using the *Wechsler Intelligence Scale for Children (WISC)* as a criterion test. The subjects ranged in age from 6-8 to 14-7 years and in grade placement from 1.6 to 8.2. All were referred to a reading clinic for diagnoses. In addition to relationships in the total group, sub-groups of below-average, average, and above-average were explored, even though the number of cases were small, especially in the last sub-group (N=9). For the total group, coefficients of correlation between the *SIT* and *WISC* were Verbal, .76; Performance, .51; and Full Scale, .74. Coefficients for the sub-groups were lower and not significant for the above-average pupils.

Sullivan (329) examined the relationships between tests of convergent and divergent thinking (Guilford) and literal and critical reading test scores of sixth and eighth grade students. Both literal and critical reading were measured by the *STEP Reading Tests*, Forms A and B. Thirty-one items were judged to be literal, while 78 items were considered as critical reading. The latter included making inferences, judging motives, analyzing and criticizing the structure of a passage. Tests of convergent thinking were Critical Thinking (Maw) and Missing Facts (arithmetic reasoning). Divergent thinking was assessed by tests of Word Fluency, Ideas (fluency), and Seeing Problems. The *California Short-Form Test of Mental Maturity* was used for general intelligence. All 5 measures of intellectual ability correlated significantly with literal and critical reading at both grade levels. Coefficients ranged from .15 to .70 at grade 6 and from .20 to .72 at grade 8. General intelligence and arithmetic reasoning correlated highest with critical reading at both grade levels. All 6 intellectual factors were canonically correlated with both reading variables, accounting for .53 and .59 per cent respectively of the variance of literal and critical reading. Using beta coefficients, only general intelligence and arithmetic reasoning contributed significantly (.005) to literal and critical reading at both grade levels. At grade 8 only, critical thinking and word fluency contributed low but significant correlations. Multiple coefficients and

their squares showed that the greatest proportion of variance was contributed by general intelligence and arithmetic reasoning while the remaining variables accounted for only 4 per cent or less of the explained variance of both literal and critical reading at both grade levels.

Lohnes and Gray (202) reanalyzed the data from the second grade phase of the US Office of Education Cooperative Reading Studies, and reported the relation of type of beginning reading instruction to reading achievement. A new multivariate analysis of the data was run in which the 18 covariates were multiply partialled from both methods and criterion tests. Canonical correlations of the treatment variables with the achievement residuals showed that there were only slight treatment effects. Thus the authors concluded that all the instructional systems were effective. A general intellectual development factor *g* was identified when intercorrelations among the achievement residuals from regressions on all predictors were subjected to factor analysis. The authors posit that the growth in this *g* factor is the basic product of primary schooling.

IV-3 Modes of learning

Rosner (286) hypothesized that beginning reading is closely related to auditory perception, while arithmetic is closely related to visual perception. He tested this hypothesis using 215 first and 219 second grade pupils in 3 public schools. All tests were administered in the second half of the school year. The *Stanford Achievement Tests* were given by the teachers. The *Visual Analysis Test (VAT)* and the *Auditory Analysis Test (AAT)*, devised by Rosner and associates, were given individually. The *VAT* is essentially a form-copying test with fewer guides for copying. The *AAT* requires the child to repeat a word then to repeat it again, omitting a given sound or syllable. The raw scores were correlated with the subtest scores of the Stanford, and partial correlations were calculated in which *AAT* and *VAT* were alternately held constant. With *AAT* controlled, *VAT* correlated significantly only with Arithmetic at grade 1 (r=.50), and with Spelling (r=.35), Arithmetic Computation (r=.44), and Arithmetic Concepts (r=.41) at grade 2. In contrast, when *VAT* was controlled, *AAT* correlated significantly with Word Reading, Paragraph Meaning, Spelling, and Word Study Skills at first grade, and with all reading subtest scores, Spelling, and Arithmetic Concepts at second grade. These findings were interpreted as support for the original hypothesis.

Robinson (279) compared the reading progress through grade 3 of pupils identified at the beginning of first grade as equivalent or markedly different in visual and auditory abilities, taught by 2 differing approaches to beginning reading. Subjects came from 2 school systems using an initial whole-word instructional approach (S) and 2 similar school systems using an initial phonics approach (P). A total of 232 subjects using the S approach and 216 using the P approach were available for testing. Selected tests from the Visual Perception battery used by Goins separated high from low visual perceivers. The *Wepman Auditory Discrimination Test* was used to identify high and low auditory perceivers. Visual and auditory acuity were screened to eliminate cildren with obvious deficits in those areas. The *SRA Primary Mental Abilities Test* was used to determine initial equivalence of sub-groups. The *Metropolitan Achievement Tests*, the *Gray Oral Reading Test*, and the *Huelsman Word Discrimination Test* were used to determine reading progress. Four hypotheses were tested. First, the multivariate and univariate analyses of reading scores showed no significant differences, at either first or third grades, between groups with high-visual, high-auditory abilities taught by either approach, P or S. Second, similar analyses showed that groups ranking low on both visual and auditory perceptual tests experienced equal difficulty in reading progress under each approach. Third, it was expected that pupils ranking high on visual and low on auditory perceptual tests would make better reading progress when taught by the S, compared to the P, approach. The data showed equivalent group scores at both grade levels, and this hypothesis was rejected. Fourth, it was anticipated that pupils ranked high on auditory and low on visual perceptual tests would make significantly greater reading progress when taught by the P approach. The data did not support this hypothesis. Finally, using all 116 subjects, multivariate and univariate analyses showed no interaction among visual and auditory modalities and P and S methods, nor among combinations of other factors. The main effects of the visual perceptual tests were not significant. However, the main effects of the auditory test, adjusted for CA and MA, were significant at both grade levels, irrespective of the methods used. Questions were raised about the adequacy of the visual perception tests for learning to read.

Ringler and Smith (278) examined the relationships among tested learning modalities and methods for teaching first grade pupils to recognize words. From transcripts of language of about 30

pupils, 50 nouns and verbs, not yet formally taught, were divided into 6 groups related to a unifying theme and placed in a teaching sequence. All pupils were exposed to additional concept development for each word. Instruction was differentiated as auditory, visual, or kinaesthetic. Auditory materials were on tapes so that pupils might listen to words in isolation and in context, and to specific sounds that composed each word. Visual transparancies emphasized configuration, size, and shape of each word. Kinaesthetic materials included cards on which words were outlined in pipe cleaners for tactile emphasis. The words for all groups occurred in sentences and paragraphs also. Tests included the *New York University Learning Modality Test (LMT)* and a criterion test of the 50 words taught plus 150 words as distractors. Both were given before and after instruction. The 128 subjects were identified as 30 auditory; 33 visual; 28 kinaesthetic; and 37 with no preference. Pupils within each preference group were randomly assigned to one of 4 treatment groups and the control group. All subjects received the regular program of first grade; in addition, the 4 modalities groups received about 7 and a half hours of small group (3 or 4) instruction using auditory, visual, kinaesthetic, or combined approaches. The criterion test was repeated. Analysis of covariance was done using teaching method as the independent variable, the criterion pretest as the covariable, and the criterion post test as the dependent variable. Significant differences were found favoring each treatment group over the control group. However, no differences were found between treatment groups themselves. A second analysis was done by modality preference on the post test scores regardless of the treatment groups. No significant differences were found, showing no single approach superior to the others. A third analysis compared groups taught by the method corresponding to their modality preferences compared to those taught by non-corresponding methods. Again no significant differences were found, showing that pupils with particular modal preferences learned equally well by any of the experimental methods.

Lilly and Kelleher (198) developed tests of visual and auditory memory, gathered data on reliability and validity, then related these scores to reading and listening memory among educationally handicapped pupils. The auditory and visual tests were composed of the same 20 words identified as recognized immediately by sight. In the visual memory (VM) test, 2 words were placed on the table before the child for 10 seconds, then removed before the subject was asked

to repeat the words in the order presented. If the correct response was given, 3 words were presented. The number of words was increased until the subject missed 2 trials at 2 successive levels of difficulty. The auditory memory (AM) test was the same except that the examiner said the words and the subject repeated them. The reading and listening tests were 2 stories chosen from Level 2 of the *Durrell Analysis of Reading Difficulty* (1955). Each story was taped and typed. All subjects read and listened to one story or the other, alternating the order. Afterward, the number of facts remembered from each story was determined. A total of 28 facts was possible in each story. The VM and AM tests were given first, then repeated 2 weeks later. At the last testing, the reading and listening memory tests were given. Auditory or visual modality strength was identified as a difference of 1.5 or more from the zero point favoring either VM or AM. The test-retest reliability for the VM test was .561 and for the AM test, .657. In addition, the AM and VM scores were correlated with reading scores from the *Wide Range Achievement Test (WRAT)* and IQ scores from the *Wechsler Intelligence Scale for Children* or the *Stanford-Binet*. All coefficients were relatively low, the highest (.410) being between *WRAT* reading scores and IQ. Eleven subjects were classified as having auditory strength and 11 as having visual strength. Analysis of variance revealed a significant interaction between modality strength and mode of presentation of the stories. Simple effects analyses showed superiority of memory for facts of the auditory-superior subjects on listening to the story and of visual-superior subjects on reading the story.

Morency and Wepman (232) studied the effects of early perceptual processing ability on later school achievement. An earlier study had shown that the level of perceptual ability continued to influence school achievement through grade 3. The present study extends through grade 6. The subjects were 120 of the original 250 who had remained in the school system 6 years. Near the end of each school year, each pupil was given the grade-appropriate *Metropolitan Achievement Tests* and the *Perceptual Test Battery* which included subtests of Auditory Discrimination, Auditory Memory, Visual Discrimination, and Visual Memory. Coefficients of correlation between each of the subtests of perception given at first grade and each of the Metropolitan subtests were significant at grades 4, 5, and 6, except for Parts of Speech; and Visual Memory related to reading and language at fourth grade. However, the magnitude of the coefficients was low (.18 to .38).

MacKinnon and McCarthy (208) investigated factors of verbal labelling as a basis for difficulty in auditory-visual integration, considered to be deficient among poor readers. The tests used were the *Gates-MacGinitie Reading Test*, Vocabulary subtest, and the *Otis Quick-Scoring Mental Ability Test*. The Verbal Labelling task was matching each of 9 nonsense sounds with different letter-like forms. The Auditory-Visual Integration task was to identify patterns of auditory taps with correct visual patterns of dots (Birch and Belmont). The Visual Labelling task was a paired-associate learning task, repeated to criterion of 2 correct successive trials or a total of 17 trials. The score was the number of trials to criterion. Coefficients of correlation were calculated among the scores. All coefficients were significant except verbal labelling and IQ, and verbal labelling and auditory-visual integration. When IQ was held constant, only verbal labelling and reading scores were significantly correlated (.33). A second step was to divide the boys into 2 groups called good and poor readers. While the mean reading scores for these groups were grades 3.1 and 1.9 respectively and were significantly different, the distribution overlapped. There was no significant difference in IQ between the 2 groups. Chi square analysis showed that only verbal labelling was related to reading with significant superiority of the good readers. Since this group of poor readers were not deficient in auditory-visual integration, it was not possible to explain differences between the groups. With the verbal labelling task so similar to learning to recognize words, and the measure of reading being vocabulary, the relationship between these 2 measures is not surprising.

Kirby, Lyle, and Amble (177) used the *Illinois Test of Psycholinguistic Abilities (ITPA)* with adult prison inmates to determine its usefulness with adult poor readers and to identify areas important for remediation. The subjects were 24 of 125 prison inmates reading below fifth grade on the *Stanford Achievement Tests*. The mean reading grade on the *Gates MacGinitie Reading Test* was 3.9. Their scores on the subtests of the *ITPA* were correlated with those of the Gates. Significant reading failure was associated with 4 areas of auditory functions: reception, association, closure, and sound blending. Also, grammatic closure skills were inadequate, but none of the visual nor verbal abilities were related to reading achievement. The measures of *ITPA* accounted for 40 to 50 per cent of the variance in reading. The 5 auditory *ITPA* tests accounted for 42 per cent of the predictive variance on the Gates Com-

prehension subtest and 49 per cent of the Vocabulary subtest. The addition of other measures increased the predictive values negligibly.

Miller (225) explored the effects of positions of letters in the 2 visual fields under conditions of visual and auditory similarity and differences, using written and oral reporting. Since letters which were visually and auditorially similar and different were needed for targets, a pilot study required 14 subjects to rate each of 325 pairs of capital letters of the alphabet on a 5-point scale, either for visual or auditory similarity. Based upon these ratings, letters from the high and low categories were used to construct 20 stimulus cards, each of 5 letters. In Experiment 1, subjects were required to report one of the 5 items, 3, or all 5. The position of the reported item was indicated on a slide following the presentation by a horizontal bar. Each position was represented equally often across each set of 10 cards. Twenty trials were given to each subject with half of the tachistoscopic exposures at 50 and half at 100 milliseconds. In the first 2 experiments, subjects wrote the required letter in its proper position in the array. Subjects were shown the letters used in each set before that set was exposed. Each letter correctly written in the appropriate space was counted correct. Analyses of variance showed significant (.01) effects of visual similarity of letters for each report condition (one, 3, or 5). In each case, high visual similarity was associated with low scores. In contrast, auditory similarity had no effect, nor did it interact with other conditions. Coefficients of correlation between the number of confusion errors across subjects and the visual similarity of pairs were negative and significant (-.46, -.43) for the 20 highly confusable pairs. No significant coefficients were found using auditory confusability. Significant differences were found for each report condition among item positions with the center of the array most accurately reported. However, when all items were required, individuals consistently reported most accurately items in the center or to the left. Analyses for subjects reporting "center" and "left" preferences showed visual, but not auditory, similarities of letters related to performance. The accuracy of reports was lower for the shorter intervals of exposure and the effects of visual similarity was greater than at higher levels. Experiment 2 was similar to the first except that a 2-second and a 4-second interval was used between offset of the target and onset of the report. Also, reports required either one or all 5 letters. Analyses showed that both visual and auditory confusability had strong influences on performance. In

this delayed report, both visual and auditory similarities correlated negatively and significantly with their confusion ratings. Of special interest was that overall performance under delayed response was superior to that of immediate response. Another 12 subjects repeated the full-report conditions of the first experiment except that they reported the items left to right orally. Even in this condition, visual, but not auditory, similarity was related to accuracy of response.

Venezky (347) studied the ability of children to learn letter-sound correspondences in a highly regular orthography, Finnish, and how the ability related to general reading ability and to socioeconomic status. Subjects were 240 grade 1, 2, and 3 children from public schools in Finland. They were separated into 5 socioeconomic levels based on father's occupation. Each child was individually tested on 25 synthetic Finnish words designed to contain the complete range of sound-symbol correspondences that appear in Finnish orthography. The number of correct pronunciations was summed for each subject and data were treated by analysis of variance using grade x socioeconomic level x sex. A significant difference (.01 level) was found for grade but not for sex or socioeconomic level. At the end of first grade, almost 80 per cent mastery was found. Girls did slightly better than boys, and there was a trend toward decreasing mean correct with lower socioeconomic groups. Coefficients of correlation were performed with the total correct and the reading score a child received on his school record at the end of the school year. The latter score was based on a 10-point grading scale. Coefficients were .508, .528, and .487 respectively for grades 1, 2, and 3. Long words and words with long consonants tended to produce the greatest number of errors. The author concluded that high letter-sound ability does not guarantee high reading ability.

IV-4 Experiments in learning

Oliver, Nelson, and Downing (250) ascertained the ability of kindergarten children to learn to visually differentiate the graphemic structure presented in 4 different orthographic units. The subjects, 20 boys and 20 girls, from 2 classes were randomly assigned to one of 4 treatments. The stimulus material was 2 lists of 4-letter words presented traditionally, in i.t.a., with a digraph underlined, and with graphemes within each word separated by double

spaces. The parts of each word were separated and children learned to put them together correctly to make "a picture of that word." A rule to follow was given and demonstrated when necessary. Subjects continued to put the training words together until all were done correctly. Then 4 new words, the transfer task, were made up of the same graphemic units as the training words but were placed in different positions within the word. Scores on the training task were the total number of trials to construct the 4 words correctly and the total number. On the transfer task there were 3 scores: 1) total number of words correctly constructed; 2) total number of errors made on the digraphs; and 3) total number of errors made on the letters other than in 2. Multivariate analysis showed significant differences between the 3 cued orthographies and traditional orthography. Univariate analyses showed no significant differences on the 2 training measures. However, all cued orthographies were superior to the traditional on all 3 transfer measures. Multiple comparisons revealed that there were no significant differences among i.t.a., underlining, and spacing conditions.

Samuels (293) examined 3 procedures to determine the best means for paired-associate learning of the names of 4 letters, *b,d,p,* and *q*. The experimental group (E) had visual discrimination training that forced attention to the distinctive features of these letters. There were 2 phases: 1) matching to sample when both were shown and 2) successive matching in which the target letter was removed before responses were made. Following 2 successive error-free responses, the transfer task was learning the names of the letters. Control group 1 (C-1) was given visual discrimination training using dissimilar letters and not on distinctive features. Members of Control group 2 (C-2) were randomly paired to a subject in the E group and given the same number of exposures as their paired mates in E group but without attention to distinctive features. The procedure for learning the letter names was the same for all groups. The subjects were 90 children randomly selected from 237 kindergartners, then randomly assigned to one of 3 groups. Each subject in C-2 was randomly paired with one in the E group. Data secured were the number of trials to criterion in visual discrimination and in transfer to learning letter names. Group E required a mean of 12.27 trials to criterion in contrast to 4.03 mean trials for group C-1. However, the mean number of trials to criterion in letter naming was significantly fewer for the E group (12.10) compared to C-1 group (17.66), and C-2 group (20.30). Likewise the E group made significantly fewer

errors, while no differences were found between C-1 and C-2 groups. By Trial 20, 72 per cent of E subjects had reached criterion while only 50 per cent of C-1 subjects and 37 per cent of C-2 subjects had succeeded.

Friedman and Greitzer (103) explored the effects of the organization of reading materials on the structure of memory for what was read. The passage described 6 imaginary fish, each with 3 similar or different attributes. Color, depth, and diet were the attributes described, along with some irrelevant information. The passages were organized by name of the fish, or by attribute. All subjects read the passage twice; half read the same version while half read one organization followed by the other. Another variable introduced was differences in syntax. Two other versions were constructed from single sets of sentences but each differed in sentence order. Time for study was varied with half allowed 2 minutes and half allowed 3 minutes. Tests were of 3 types: free-recall, cued-recall, and recognition (true-false and completion). The 224 college students were randomly assigned, 14 to each condition. Scores were the number of correct associations and the number of items recalled correctly. Responses were coded according to an organization or clustering index. Analysis of variance showed no effects of the syntax variable. Study time for 3 minutes produced superior scores compared to 2 minutes. In the 2-minute time, attribute-attribute (AA) readings surpassed (.05) the other 3 types of repeated readings including name-name (NN) organization. In 3-minutes, AA significantly surpassed only NN. On the free-recall items, the clustering indexes generally followed the presentation pattern but with the last organization read having greater influence than the first and with the attribute-organized passage surpassing the name-organized one. The cued-recall test, which required subjects to fill in name-attributes in a blank table with columns labeled, showed no effect of study time. Again, however, the AA condition was significantly superior (.05) to the NN and AN conditions at both time intervals. Differences among recognition scores were not significant. The study suggests that passage organization can be arranged to alter information-processing approaches to memory.

Sassenrath and Spartz (296) examined the effects of immediate and delayed feedback time on learning and retention of what was read by school-age children. Subjects were 194 sixth grade pupils in 8 classrooms. Their Lorge-Thorndike mean IQ was 109.9 and mean reading grade on the *Comprehensive Test of Basic*

Reading Skills was 7.5. The reading selection was a 1,000-word essay which they were given 6 minutes to read. Immediately they were given a multiple-choice test of 20 items. Then 8 treatments were instituted: immediate feedback with a second test; same with no second test; 4-hour delay with feed back and second test; same with no second test; one-day delay in feedback with second test; same without second test; 3-day delay with a second test; and the same without a second test. Three days after receiving feedback, each group was given a delayed retention test which included the same questions but in a different order. The results showed no significant differences among the 8 groups on the initial test. Analysis of variance showed no significant differences on the second feedback tests that were attributable to feedback intervals. However a 4x2 analysis of variance of delayed retention revealed significant (.05) differences due to feedback intervals. The only feedback interval showing significantly lower scores was that of 3 days. Essentially, pupils retained as much from one-day intervals as from 4-hour or immediate feedback.

Watts (351) tested the effects of "arousal" by using adjunct questions inserted in instructional materials as high pre-exposure, and no questions for low exposure, and examined relationships to anxiety. In the first experiment, 64 fifth and sixth grade pupils read 2 passages, each of about 700 words, divided into 6 paragraphs. Half the subjects read a paragraph, turned a page and answered 2 detailed questions on it, then went on to the next paragraph. The other half had no questions. After all subjects read the second passage, they were given 12 questions, (Practiced) 2 of which had followed each paragraph, and 12 additional questions (Incidental) on the same passage. No questions were asked on the first passage at this time of immediate post test. Eight days later all subjects again answered the 24 questions as a test of delayed recall. Analysis was made between subjects on presence or absence of questions on each passage and within subjects, between immediate and delayed recall, as well as Practiced and Incidental questions. Results showed significant superiority of groups on Practiced items and Immediate test results were higher (.01) than delayed results. Comparison of scores on the Incidental items at both testing times showed no effects of the presence of questions within passages, hence no support for "arousal." In the second experiment, subjects were selected on the basis of high or low scores on the *Test Anxiety Scale for Children* (Sarason *et al.*). Since only the girls approximated a normal distribu-

tion of scores, boys were omitted. The final number of 92 repeated the first experiment. For the Practiced test items, anxiety was a significant factor with low test anxious subjects surpassing those who were high-anxious. Subjects using high arousal conditions dropped sharply on second compared to first post test scores. On the Incidental questions, both test anxiety and time of testing proved to have significant main effects similar to responses to Practiced questions.

Yussen (364) examined the effects of verbal and visual highlighting when the training was either relevant or irrelevant to the transfer task. Two groups of 60 subjects at nursery school and at second grade were used. The 4 treatments were 1) verbal irrelevant, visual relevant; 2) verbal relevant, visual relevant; 3) verbal relevant, visual irrelevant; and 4) verbal irrelevant and visual irrelevant. In addition there was a control group that viewed a random display of forms and received no verbalization instruction. The targets were 40 squares and 40 circles, half of which were 1.5 inches per side or in diameter and the other half 2.5 inches. For half of the subjects the large forms were considered correct in training and the small ones in the transfer task. The size was reversed for the other half of the subjects. Correct choices lighted a panel in the visual treatment and in the verbal, pupils told the examiner their choice. Training continued until subjects responded correctly on 7 consecutive trials or failed to achieve criterion on 50 trials. Analysis of variance applied to the treatment data showed significant effect of age, and visual treatment. Unexpectedly, younger subjects made fewer errors than older ones. Subjects receiving visual-relevant training made more errors than those receiving visual irrelevant training. However, none of the training groups learned with more or fewer errors than the control group. Analysis of the transfer scores showed only a main effect for verbal treatment, with verbal-relevant subjects making fewer errors than verbal-irrelevant ones. The verbal treatment effect was significant (.01) at each age level. Younger subjects made fewer errors than the control group with all treatments, but significant (.01) differences were found only for relevant verbal training groups. At second grade, none of the experimental groups surpassed the control group. The conclusion was reached that language provided mediation for learning.

Jacobson (152) reported 4 experiments dealing with the effects of associated or non-associated words on latency in recognizing the first of the pair of words presented tachistoscopically. Different

subjects were used in each experiment but all were college level. The target word (*square*) was exposed for 8 milliseconds (msec.) and the mask word came 10 msec. after the onset of the first. If the target word could not be read correctly, the interval was increased by 10 msec. until it was successfully read. The delay of the mask was the dependent variable. The results showed that the mean interonset interval for associated words was 28.5 msec., but for non-associates, it was 55.0 msec., a difference highly significant. In the second experiment, 4 groups of subjects were assigned to associate, non-associate, pseudo-words, or visual noise groups. The target words were the same as in the first study but the visual noise mask consisted of random black and white squares with a target letter 2 squares high. The results showed mean interonset intervals for the target word as follows: associate, 62 msec.; non-associate, 91 msec.; O-order or pseudo-words, 89 msec.; and visual noise, 40 msec. Significant differences were found between associate and non-associate as well as O-order groups; the relative superiority of the visual noise group was unanticipated. The third experiment tested the effects of cross-modality masks. The target word was presented tachistoscopically while the other word was presented aurally simultaneously with the target word. The findings supported those in the first 2 experiments, even with only 9 subjects. The fourth experiment dealt with the effects of presenting an associated word or a non-associated word followed by the target word. As soon as the first word was pronounced, the second appeared and the latency of the second response was recorded. The same subjects responded to associated and non-associated "priming" words. The mean latency of words seen after their associates was 531 msec. compared to that of 589 msec. for non-associates, a difference which was highly significant (.0006). The findings of all experiments were interpreted neuropsychologically.

IV-5 Visual perception and reading

Klanderman and Gregory (178) tested the effects of a program to develop perceptual-motor skills among 70 kindergarten children, half assigned to experimental and half to control groups. Pretesting in October was done with the *Stanford Early School Achievement Test*, *The Boehm Test of Basic Concepts*, and an adaptation of the *Wheeling Motor Skills Survey*. These 3 tests and the Matching and Copying subtests of the *Metropolitan Readiness Tests* were re-

peated in April. Both morning and afternoon classes were assigned randomly to experimental and control groups. Each group had 2 hours of differential treatment a week for 24 weeks, half in the gymnasium and half in the classroom. The same teachers worked with each group. The experimental motor treatment in the gymnasium was carefully programmed so that both verbal and motor directions were followed. In the classroom, the Frostig materials were used. The control group had relays and other games in the gymnasium as well as cutting, pasting, and copying from a workbook in the classroom. Although no data are given and there is no mention of statistical analysis, the conclusions state that there was no relative advantage for the experimental group in academic achievement, mastery of basic concepts, gross or fine motor skills. A difference was found between the progress made by the 40 children in the morning and the 30 in the afternoon groups with the latter making a significant improvement in academic test scores. The difference was attributed to pupil-teacher ratio.

Smith and Marx (312) examined the underlying factor structure of the *Frostig Developmental Test of Visual Perception (DTVP)*. The test was given to 43 children, ages 5 to 10 years, referred for educational assessment. Two other tests were included: the *Wechsler Intelligence Scale for Children (WISC)* and the *Wide Range Achievement Test (WRAT)*. Chronological age was included. A factor analysis of the coefficients of correlation among the 5 scaled subtest scores of the *DTVP* yielded a single factor, regardless of whether unity or maximum row values were entered in the diagonals. When the *WISC*, IQ, and the *WRAT* reading scores were added, 2 factors appeared. The *DTVP* subtests comprised the first factor, except for a negative loading of chronological age. Both the IQ and the *WRAT* reading scores appeared in the second factor. The results showed that reading achievement did not correlate significantly with the Frostig Perceptual Quotient or any of the subtests of the *DTVP*. Serious limitations in the *DTVP* scoring system for older pupils, age 8 and above, are explained.

Silverstein (306) used 12 sets of data collected for subtests of the *Frostig Developmental Test of Visual Perception* to determine the common variance among them. A prior analysis by Chissom and Thomas had used factor analysis. Since the reliabilities of the subtests were not known, the squared multiple correlation of each subtest with the others was used. On the average, about 40 per cent of the variance was common to all subtests while 60 per cent was

attributable to specific and error variance.

In an effort to determine children's responses, before training, to reversible letters, Jackson (151) asked naive observers if *b* and *d* were alike or different. The letters were one and a half inches high and one inch wide, mounted in channels on clear plastic. The 2 letters were presented first (with bulges facing one another) one and a fourth inches apart and asked if this one (*b*) were the same as this one (*d*). Then the *d* was slid behind the *b* forming a superimposed image and the question repeated. Finally, the letters were separated again and the question repeated. Two samples of 21 children in kindergarten and 22 indigenous New Guinea children who had not left their primitive villages were used for the study. The ages of the latter group were estimated between 6 and 9 years except that 2 were 10 and 2 were 13. They had never seen print. The results showed that all but 2 of the European sample and one of the New Guinea group perceived *b* and *d* as the same on first exposure. When *b* and *d* were superimposed all but three of the European sample said that they were different while 17 of the New Guinea subjects said that they were the same. When the *b* and *d* were separated, 16 European subjects again said that they were the same; although 13 had just said that they were different when superimposed. These findings suggest that children must be taught the difference between such letters.

Nodine and Steuerle (243) used eye-movement photography to determine differences between pupils in kindergarten and those in first and third grades in the way letters are viewed. The camera was set up so that each frame of the 16-mm film contained a picture of the subject's right eye together with a reflected image of the stimulus display. Two projectors were used to rear-project the slides with clear letters on black background. The letters were chosen according to confusability ratings: 4 pairs high, 4 medium, and 4 low. Also 12 matched pairs of letters were chosen from the letters of the unmatched set. Presentation of the 24 pairs was randomized. Subjects were asked to tell if the pair of letters was the same or different; their eyes were closed when they made their responses. Number and positions of fixations were supplied by the computer. Analyses of variance showed differences by grade on all 3 criterion measures, on number of fixations, on fixation time or duration, and on number of cross comparisons of letter pairs. Both third and first graders required significantly fewer fixations, less time and fewer comparisons than did kindergartners. All 3 measures were lower for

matched letter pairs than for unmatched pairs. Confusability of letters produced no main effect but interacted with pairings (.05) when fixation time was the dependent measure. Qualitative differences were found also. Kindergartners made a larger proportion (71 per cent) of fixations on target areas than first graders (53 per cent) or third graders (53 per cent). However, 78 per cent of non-target fixations of first and third graders were between the 2 letters. Overall error rate was only 8 per cent, made mostly by kindergartners. Pairs containing oblique lines as distinctive features proved to be most difficult. Errors required fewer fixations, less time, and fewer comparisons than correct responses suggesting incomplete sampling of the letter display. Using a grid to determine the location of distinctive features of each letter pair, the report showed increased use of the distinctive features of letters from kindergarten to third grade. The visual fixation patterns of kindergartners was described as overly elaborate, diffuse, and saturated with redundant fixations.

McDowell and Youth (216) investigated the effects of discrimination pretraining on the intralist similarity using kindergarten pupils. The 40 subjects were divided by sex then randomly assigned to one of 4 groups. Four 4-letter words were presented for learning to each group. Two groups learned the words of low similarity (no recurrent letters) while 2 groups learned the high-similarity words. Correct responses were indicated and incorrect ones were corrected. Each list was presented 10 times in a session and repeated daily until 2 consecutive times through the list were errorless. Prior to this learning, one of the low-similarity and one of the high-similarity groups had pretraining in discrimination of the same words. A Stimulus-Response Programmer was used for word matching with both target and response words present and later with target word removed before response words appeared. Measures of learning were rate of learning or the number of trials and number of errors made; word recognition or the ability to identify the learned words among others which had not been presented; and generalization test, in which a word differing from the original only by one letter was expected to be pronounced as the original word. The results showed that the high-similarity list was learned more slowly and that discrimination pretraining facilitated learning. However, the pretraining had no more effect on the high than on the low similarity lists. Errors to criterion showed effects similar to trials. Using word recognition as a criterion, analysis of variance showed that the high intralist-similarity groups scored significantly higher

than the low intralist groups. Pretraining had no significant effects. No significant group differences were found on word generalization.

Timko (337) studied the effects of systematic variation of the positions of letters in matching trigrams, especially in relation to the outer letters. The subjects were in the first month of first grade. The 40 nonsense trigrams were exposed singly, followed by 3 choices in which the first and second, the first and third, and the second and third letters were reversed in order. Since there was no match, pupils selected the one trigram most like the target. The results showed a significant (.05) difference between response conditions with either the first or last 2 letters reversed in order being chosen most often. Thus pupils chose trigrams with similar outer letters rather than those of mirror images.

Gibson, Tenney, Barron, and Zaslow (110) investigated the relative scanning time used by middle graders and adults in locating target letters when the target letter was embedded in pronounceable non-English (OS) words as compared to unpronounceable words (NS). The letter *N* was used for all word lists, composed of 5 letters in each horizontal string with 30 rows. All pseudo-words were monosyllables with the *N* appearing in all 5 positions. Sixty items called context items were prepared for each condition, OS or NS, using all letters of the alphabet except *N*. Then 20 OS lists and 20 NS lists were constructed by drawing one item from the target pool (containing *N*) and 29 items from the context pool. Subjects were asked to scan the letter strings from top to bottom until they located the *N*, then press the button and report. Meanwhile the time for scan was recorded for the target letter in each row which had been randomly placed. The validity of the mean rate of scan per line ranged from correlations of .85 to .91 for the 2 populations. The mean rate of scan per line to locate the target was not significantly different for OS and NS groups, as the only significant variable was age; adults scanned significantly faster than the children. The question as to whether subjects noticed that some strings were pronounceable was based on the report of "What do you see?" in the practice list. In condition OS, 91 per cent of children reported "words" while in NS, 88 per cent reported "letters." The dichotomy for adults was not as clear because some reported nonsense words or syllables. In order to determine whether certain subjects processed whole strings while others proceeded letter-by-letter, mean latencies for each individual in each condition were calculated and divided into 10 equal intervals. Distributions for both OS and NS had only one mode and they

were similar in shape at each age level. The conclusion was reached that the sequence in which features of words are processed is dependent upon the task.

Furby (106) wished to test the validity of Piaget and Morf's theory of the development of perception of verbal symbols and to examine developmental changes in strategies used to solve problems involving word perception. The subjects for the study were 48 pupils at each of grades 2, 5, and 8, equally divided by sex. Five aptitude tests were given: for decentration, 1) 3-letter words, and 2) Hidden Patterns; for linear spatial visualization, 3) Jumbled Letters, and 4) Jumbled Figures; and for general spatial visualization, 5) Card Rotations (Thurstone). Reading achievement was determined by the *Stanford Achievement Test* or the *Sequential Test of Educational Progress*, appropriate to the grade tested. The instrument used for problem solving was anagrams. Two types were high frequency, all AA in the Thorndike-Lorge count and greater than 500 in the juvenile count; and low frequency words, less than 100 in the adult and 500 in the juvenile counts. Word letter transition probability (LTP) for solutions was calculated from the Mayzner and Tresselt Tables of Bigram Frequencies. For high LTP solution-words the mean LTP was 296; for low, 174. Stimulus LTP for each of the anagrams was equated. Three- or 5-letter words or nonsense arrangements were used and pupils were required to make a word using all of the given letters and no more. Each of 4 anagram lists of 32 items contained 2 samples of 4 parameters (frequency, solution LTP, type, and length). Each subject received one list. One minute was allowed for the solution, or time was recorded if the problem was solved sooner. Solution time and number correct correlated .89 for second, .83 for fifth, and .81 for eighth graders. The 2 measures of decentration correlated .43 with one another and .33 and .38 with reading achievement at grade 8, although not significantly at the earlier grades. Jumbled Figures and Jumbled Letters correlated .70, .44, and .88 respectively at the 3 grade levels, but low correlations were found with reading. The Jumbled Figures and Jumbled Letters appeared to measure different abilities than Card Rotation. Word Anagram performance did not correlate significantly with Hidden Patterns at any grade level but did correlate significantly with 3-letter Words, while Nonsense Anagram scores were significantly correlated only at grades 2 and 5. Card Rotation was significantly correlated (.33) only with Word Anagrams at grade 5. Jumbled Figures and Jumbled Letters were unrelated to anagrams except for

Nonsense Anagrams at grade 5. When anagram performance was regressed on decentration, partial correlation showed no relation between anagram linear spatial ability and anagram scores at second grade; significant partial correlation with Nonsense Anagrams only at grade 5; and no relationships at grade 8. The results are interpreted as support for Piaget's theory of increased perceptual decentration, and suggests that perceptual development is important to reading. Both perceptual development and individual aptitudes appear to be important to problem solving strategies as tested here.

Coleman reported 2 studies of visual-perceptual-motor skills as they related to academic achievement, which included reading. In the first report (62) a description and analysis of the test was given. The subjects for the original evaluation were 4,685 in kindergarten through grade 6 in both public and parochial schools. The test battery required approximately 30 minutes to administer on an individual basis. Six optometrists did the testing at 6 stations, and they were rotated to reduce examiner biases. Performance on most of the tests was rated on a scale of one to 4, the latter being highest. There were 22 subtests, organized under these characteristics: Movement and awareness of the body in space; Visual Acuity; Ocular Motility; and numerous individual tests of form, body image, number, visual memory, laterality, color vision, and the like. Based on complete scores of 3,356 children, means and standard deviations were calculated. Mean scores increased with grade while standard deviations generally decreased. A correlation matrix for the visual-perceptual-motor subtests was subjected to factor analysis to identify the main components of the tests. Four factors emerged on which 16 tests loaded significantly. Factor I, called Ocular Movement and Coordination, included rotations, versions, fixations, and form concepts. Factor II, called Reproduction of Perceptual Patterns, included writing, body image, number sequences and concepts, and visual memory and recall. Factor III, named Spatial Discrimination, was loaded with tests of laterality and directionality, spatial orientation, hand-eye coordination, graphesthesia, and stereopsis (measured by the *Titmus-Stereo Fly Test*). Factor IV was identified as Accommodative-Convergence Relationship. Tests included were visual acuity at near, the "Cover Test," and color vision. The *Metropolitan Readiness Test*, the *Stanford Achievement Test*, and the *Otis-Lennon Intelligence Test* formed a separate factor. To determine the predictive value of this test battery, 146 first graders were used, the 4 factors identified and the 6 others not included

were used in a step-wise multiple linear regression analysis to predict median stanine scores on the *Stanford Achievement Test*. The Reproduction of Patterns factor correlated .545 and accounted for 30 per cent of the Stanford variance. Adding the Spatial Discrimination increased the correlation to .573, and the 2 factors accounted for 33.4 per cent of the achievement variance. The addition of other variables did not increase the predictive value appreciably. A total of 455 children were found who repeated a grade. Of these 79 males and 45 females had scores considered low on the visual-perceptual-motor battery of tests. The 9 subtests were recommended for further screening as they could be administered by a trained teacher.

In the second study, Coleman (63) reported results from compensatory education of a class of first-grade repeaters and of pupils identified early in first grade and given compensatory instruction. Each was matched with a control group for comparison. Pupils in the class of repeaters had visual perceptual scores below 1.5 standard deviations from the mean on the 9 subtest total score, had no evidence of neurological or emotional dysfunctions, and had parental approval. A multidisciplinary team planned the program with the classroom teacher as the key person. The team included the visual-perceptual specialist, an educational supervisor, a classroom teacher and her aide, a physical educationist, a language therapist, and an audio-visual consultant. The overall approach was multisensory with no optometric or standard visual training. The Orton-Gillingham approach for severe reading disabilities was adapted to small groups. The language teacher spent one hour per day with the class. The physical education curriculum had movement and motor coordination emphasis and included one hour per day. Introduction of the new math was postponed until the second half of the school year. Each pupil improved significantly in motor abilities. The 14 pupils increased Stanford reading scores as follows: Word Meaning — grades 1.3 to 1.9; Paragraph Meaning — grades 1.4 to 2.3: Vocabulary — 1.4 to 2.6; Word Study Skills — 11 months. All children went on to second grade and were reported to be doing well. As a result of the first pilot program, a second pilot program began with 14 pupils identified in September of first grade as needing therapeutic intervention. In this group the language therapy was given by the teacher and physical education was reduced to 4 days per week. Otherwise the educational program was the same. No changes were found from pre- to post test on the *Wechsler Intelligence Scale for*

Children. Comparison of pilot and control showed that the former exceeded the latter significantly (.05) in gains in visual-perceptual-motor skills. Comparisons of end of year scores on the *Stanford Achievement Test* showed mean scores of grades 2.3 and 1.8 respectively for the pilot and control groups, a difference which was significant (.01). In Stanford subtests the pilot class significantly (.01) exceeded the control class in subtests, Word Meaning, Paragraph Meaning, Spelling, and Word Study. No differences were found in Vocabulary or Arithmetic.

Holding (146) investigated the visual information storage hypothesis using both familiar letters of English and unfamiliar Arabic letters, or with Arab students, the familiar Arabic and partially familiar English letters. The 8 American subjects were college freshmen, while the Arabs were at varying academic levels. They had been in the United States or Canada a mean time of 4 years. The stimulus materials were all of 12 letters, arranged in 3 rows of 4 letters each and displayed for 50 milliseconds in a tachistoscope. Both whole and partial reports were elicited in separate blocks of 10 cards in each language. In a supplementary session, all subjects were timed as they read aloud as fast as possible 2 or 4 sets of 10 practice and test cards in one or both languages. The results showed that partial report scores were higher than one third the total report scores. The American subjects whole-report mean was 3.20 letters, while less than one Arabic symbol was retained. The difference was significant (.01). The Arabs did less well than the Americans with English letters but better than with Arabic letters. The speeds for reading aloud in Arabic and English showed no significant difference. The conclusion was reached that any simple form of visual storage hypothesis was not confirmed.

Thompson and Massaro (334) reported 2 experiments to determine the size of the perceptual unit in word identification. Two important factors were visual information and redundancy. The visual similarity was tested by 2 levels of alternatives (similar and distinct) following both letter and word presentation. There were 4 conditions: 1) single letters followed by alternatives of low visual confusability; 2) single letters followed by letters of high visual confusability; 3) 4-letter words followed by letters of low visual confusability; and 4) similar words followed by letters of high confusability. The words included 72 monosyllabic words in which one of the 4 was to be identified later. Either letter chosen later to replace the critical letter formed a word. All words and letters were printed

in upper case type and were presented tachistoscopically. After the target was presented, the target area was masked and the 2 letters for responses appeared above the mask. The critical letter was underscored in each word to show that it must be replaced by one of the response letters. Over a period of 5 days, each of he 9 college students contributed 48 observations. The results showed that accuracy for words was 73 per cent, superior to that (64 per cent) of letters. Across both letter and word presentations, identification of the distinct test alternatives did not exceed similar alternatives. The results were not considered definitive, so a second experiment was done to reduce the effects of redundancy. Subjects were given a fixed number of alternative responses (P, R, C and G) before the experimental session. All letters completed common 3-letter words if placed in the middle position. Each of 7 college students with normal or corrected vision contributed 48 observations to each combination of the experimental variables: stimulus (letters or words), similarity of alternatives (similar or distinctive), and the 4 different test alternatives. These results showed higher accuracy (78 per cent) using letters than words (67 per cent). Eliminating the redundancy of words, letters were significantly (.025) more accurately perceived alone than embedded in words.

The prediction that poor readers would demonstrate greater difficulty than normal readers on inter- vs. intra-sensory learning was tested by Vellutino, Steger, and Pruzek (346). Normal readers were expected to perform better than poor readers in learning visual-auditory paired associates, but no differences were expected in learning visual-visual or auditory-auditory paired associates. Subjects consisted of 2 groups of 28 boys and 2 girls each. In both groups the *WISC* was administered and only children with either a Verbal or Performance IQ of 90 or better were included. The *Gilmore Oral Reading Test* and the *Metropolitan Reading Test* were also given. Poor readers were identified as those who scored 2 or more years below grade level on both tests while normal readers had to have scores at or above grade level to be included. All subjects were also given tests of sight vocabulary and phonic skills. Three separate experimental subtests involving both visual and auditory non-verbal stimuli were given. One subtest called for the learning of 2 visual associates; a second required the learning of 2 auditory associates; the third paired a visual stimulus with an oral response. All subjects were exposed to all conditions. Multivariate techniques and product moment coefficients of correlation were used in the analysis. There

was a high degree of similarity in the performance of both groups in all of the association modes. When verbal IQ was used as a covariate, the performance of the 2 groups showed an even closer correspondence. The auditory-auditory association task proved to be the most difficult of the 3 tasks.

IV-6 Auditory perception

McNinch, Palmatier, and Richmond (222) constructed a test of several auditory perceptual abilities and analyzed it, using kindergarten and first grade pupils. The *Screening Test of Auditory Perceptual Skills (STAPS)* contained 42 test frames with 4 subtests: Auditory Memory, Auditory Discrimination, Auditory Blending, and Auditory-Visual Integration. Auditory Memory was tested by 7 test frames in which the examiner presented unrelated nouns orally and the subject drew a line under one of the 3 pairs of pictures displayed. The range in scores is from 2 to 7. The *Auditory Discrimation Test*, composed of 15 items, includes 3 words which are alike, or in which the middle word of the 3 differs by one sound. Pupils mark the picture if all 3 are alike or the word *NO* if they are different. In Auditory Blending, pupils must blend orally presented word parts to form a word which is represented by one of 3 pictures. Auditory-Visual Integration requires the pupil to mark a pattern of dots to conform to the orally presented speech pattern. The test was given to 3 groups: 1) 20 five year olds, 2) 66 beginners in first grade, and 3) 33 pupils completing first grade. Group 2 was also given the *Lorge-Thorndike Cognitive Abilities Test* early in the year while groups 1 and 3 took the *STAPS* test at the beginning and end of the school year. Group 2 was the target group and the mean IQ was 95. To determine reliability, the Kuder-Richardson Formula 20 was used for all 3 groups. The reliabilities of the Total Score were .80, .92, and .67 for groups 1, 2, and 3 respectively. The reliabilities of the subtests ranged from .24 to .95 across groups. To determine whether different skills were measured by the subtests, coefficients of determination were calculated. Since none of them exceeded .71, the conclusion was reached that while there was some communality, there was evidence of considerable uniqueness. To determine whether the test measured developmental performance, analysis of variance was applied. The data showed significant differences among the 3 groups on all 4 subtests and on the total score.

McNinch and Richmond (223) sought to determine the predictive power of their experimental test, *Screening Test of Auditory Perceptual Skills*, on criterion measures of reading achievement. The experimental test was given in October of first grade, along with the *Lorge-Thorndike Test of Cognitive Ability*, while the 3 reading subtests of the *Stanford Achievement Tests* were given in May, at the end of first grade. An intercorrelation matrix was prepared from which multiple regression models were calculated. A full model was generated for prediction, and restricted models with sex and IQ in and out were used for comparison. The investigators found that the experimental test accounted for 41 per cent of the variance in Word Reading, and 25 per cent of the variance in Paragraph Meaning. The comparison of restricted models showed that sex made no contribution to the predictive power of the experimental test on any of the 3 reading subtests. However, IQ was the best predictor of the Vocabulary subtest only, accounting for 37 per cent of the variance.

Hardy, Stennett, and Smythe (131) presented findings on a study with a threefold purpose: 1) to assess the development of auditory segmentation and auditory blending skills in primary age children; 2) to determine the function of grade level, type of unit, and length of sentence with these 2 skills; and 3) to note the relationship between auditory segmentation and blending abilities with other subskills in beginning reading. The 126 grade 1 and 2 children came from an innercity school in Ontario, Canada, that had a high proportion of lower socioeconomic status families enrolled. The auditory segmentation test (AST) consisted of 3 subtests, each containing 15 items: sentences into words (SW), words into syllables (WSi), and words into phonemes (WP). SW consisted of sentences varying in length from 3 to 7 words with 3 sentences of each length; WSi had 5 words each of 2, 3, and 4 syllables in length; and WP had 5 words each of 2, 3, and 4 phoneme lengths. The auditory blending test (ABT) consisted of a syllables to words (SiW) subtest and a phonemes to words (PW) subtest. The 15 SiW items had 5 items each of 2, 3, and 4 syllable lengths. PW contained 13 two-phoneme, 12 three-phoneme, and 6 four-phoneme words and included all possible combinations of single consonants, consonant blends, consonant digraphs, single vowels, controlled vowels, vowel blends, and vowel digraphs. In addition, 5 other measures were taken: reading achievement, phoneme span, word recognition and decoding, visual segmentation, and phoneme-grapheme recognition. The reading

achievement score consisted of a grade equivalent score of a child's oral reading as determined by his teacher. Phoneme span involved recall of speech sounds. Word recognition and decoding scores were obtained from a series of 225 letter combinations, one-fifth of which were real words and the rest of which were nonsense syllables. Both recognition and decoding score were based on the number of real words correctly identified and decoded. The visual segmentation test called for the identification of a digraph or trigraph embedded in a 5-letter or 7-letter unit respectively. For the phoneme-grapheme recognition, subjects had to identify the appropriate phoneme from a set of 5 that they heard pronounced. An analysis of errors in AST on a random sampling of 20 subjects revealed few errors in SW. In WSi, children tended to segment the first syllable only in words of more than one syllable. Also syllables made of single vowel sounds in the medial position appeared difficult to segment. In WP, a trend toward segmenting the first phoneme and then repeating the whole word was found. For ABT, consonant-consonant blends appeared easiest in SiW followed by consonant-vowel combinations. For PW, vowel digraphs and controlled vowels appeared more difficult to blend than other items. An intercorrelation matrix that reading achievement correlated .61 and .62 with SiW and PW respectively and .15, .36, and .26 respectively with SW, WSi, and WP. The coefficient between SiW and WSi was .17 and between PW and WP, .50. The authors felt that this indicated that these skills are not highly related. It was also found that grade, length of sequence, and type of unit all affected performance. Grade 2 children did better than grade 1 children; longer items were more difficult than the shorter items; and it was easier to blend SiW than PW. The authors felt that their findings showed that the syllable is more likely the natural perceptual unit of spoken language than the phoneme.

IV-7 Reading and language abilities

Fasick (93) noted that listening to stories read to young children has proved superior to viewing commercial television (TV) in developing language, so she sought a possible explanation. She hypothesized differences in linguistic variables and compared 1,614 sentences from TV with 536 from 5 books. She divided the sentences into both simple sentence structures, including 1) incomplete sentences and 2) unexpanded simple and compound sentences, and also more complex structures, including 3) expanded

simple and compound sentences, and 4) compound and compound-complex sentences. The investigator found that 64 per cent of the TV sentences were classified as simple and 36 per cent complex; the storybooks had 34 per cent simple and 66 per cent complex. In the TV sample, 38 per cent of the sentences were incomplete (as may characterize conversation). The amount of subordination was calculated using Loban's rating scale. The average subordination index of all storybooks was 38 compared to 29 for the TV programs. The wider range of syntactic patterns to be found in books may be one factor, at least, which improves language resulting in better reading.

Stoodt (326) studied the relationship between understanding conjunctions and reading comprehension. The subjects were a stratified random sample from 3 socioeconomic levels of fourth graders. A multiple choice test was constructed based on the conjunctions used most frequently at fourth grade. A second instrument consisted of 3 cloze tests of 200 words each: 1) one with a high number of conjunctions, 2) one with half of the conjunctions of (1), and 3) one with no conjunctions. Reading was measured by the subtests of the *Stanford Achievement Test*, and mental ability with the *Pintner Mental Ability Test*. Analysis of the data supported the first hypothesis that there was a significant correlation between each subject's ability to identify relationships that conjunctions signal and reading comprehension. Both the partial correlation between the conjunction and comprehension tests, and the analyses of variance of the cloze test of conjunctions supported the hypothesis. In addition, as hypothesized, some conjunctions were more difficult than others. The most difficult were *when, so, but, or, where, while, how, that,* and *if*. The easiest conjunctions were *and, how, for,* and *as*. The third hypothesis, that selected demographic variables were related to understanding conjunctions, was accepted. Girls achieved higher than boys; socioeconomic level was related; and a high positive correlation was found with intelligence quotient.

Bickley, Bickley, and Cowart (23) reported a study designed to determine the effectiveness of oral language responses as a predictor of reading achievement in the fourth school year. Specifically, language responses were associations to the 30 words of the *Oral P/S Language Inventory*. The responses were classified as paradigmatic if they were illustrative of the relationship of superordinate, coordinate, contrast, or part-whole. All other responses were classified as syntagmatic. The *California Reading Test* was the

criterion measure. A median split placed the subjects in high or low groups, the former scoring at or above grade 3.3 and the latter at or below grade 3.2. A *t*-ratio was derived from the number of syntagmatic responses given by the 2 groups, and it was significant (.05). The authors conclude, on this basis, that a subject who gives more than 15 syntagmatic responses will score lower on the reading test than one who tends to give paradigmatic responses.

McNinch (221) explored the effects of training in paradigmatic language responses on reading achievement and on subsequent paradigmatic responses. His subjects were 45 selected from a population of 180 sixth graders. The selection criteria were 1) reading one to 3 years below grade placement on the Reading subtests of the *Stanford Achievement Test*; responding with more than 50 per cent syntagmatic words on the *Oral C/A Language Inventory*; and within the IQ range of 80 to 120 on the *Lorge-Thorndike Intelligence Test*. The 45 subjects were randomly selected from those meeting the criteria of reading and intelligence. They were given the 30 item language test on which the mean of 23 syntagmatic responses was found. The 45 subjects were assigned randomly to 3 groups: experimental, placebo, and control. Each of 12 experimental lessons of 30 minutes including 4 levels of paradigmatic functionings with written and oral responses was distributed over 3 weeks. The placebo group received the same amount of time with emphasis on language enrichment. The control group was given pre- and post tests only. Post tests were another form of the Stanford and the same language inventory. Intercorrelation coefficients showed insignificant relationships between paradigmatic responses and the reading or intelligence test scores. Analyses of variance, using pretest scores as covariants, showed no significant effects of experimental or placebo treatment over the control treatment on Word Meaning or Paragraph Meaning subtests. However significant *F*'s (.01) were found when the criterion was paradigmatic responses. After treatment, the experimental group had the highest mean paradigmatic score and the placebo group the lowest. The conclusion was reached that language enrichment does not lead to improvement in this aspect of language; only direct instruction does. Even so, improvement did not affect reading scores.

Francis (100) explored the ways young children learning to read were able to recognize structural patterns in simple sentences and the relationship of this ability to comprehension. The pupils were from good social backgrounds and had better than average

vocabularies. They were tested at 6-month intervals, beginning in their first school year at mean age of 5-9. The instructional methods were described as eclectic, including sight and phonic approaches and sentence reading and writing. The test for different simple sentences was constructed by printing the transformation of the active form on a card with the active form and the syntactically identical transformation on a separate card. Subjects chose one of the 2 sentences which resembled the test sentence and were asked to explain the reason for their choice and to read aloud any of the words in the sentences which they could. The results revealed that at the time of first testing, matching was predominantly with the same surface structure; while at 6-month intervals thereafter, there was a significant trend toward matching semantic relations. The exception was the passive, in which few children achieved a semantic matching, even at the top age, 7-3. There was a positive relationship between number of words read at each age and choice of the active form of the sentence. The conclusion was reached that children matched similar letters and words more often than whole sentence frames. A second aspect of the study was to determine these children's awareness of structure by splitting both spoken and written sentences where it was easiest to stop. Nine sentences of different structures, ranging from 3 to 7 words, were either repeated or read orally. The results showed that the favored position for splitting was after the second or third word, depending upon sentence structure. Most separations were made after pronouns, nouns, or verbs in positions other than the first and after *not*. Individual responses were scanned for consistency and little was found (and in only 2 children). The conclusion was reached that young children showed sensitivity to functional use of speech rather than to structure.

Jurgens (167) made a study of the effects of different types of ambiguity within sentences on the time required to process them and the number of correct interpretations. Also, she investigated developmental changes at the junior high level. Sixty sentences were constructed, with equal numbers having no ambiguity, ambiguity at the lexical level, structural ambiguity at surface level, and ambiguity at the underlying structural level. Each lead sentence was typed on a card along with 2 interpretative sentences, one or both of which could be correct. The lead sentence was read aloud, and latency was measured time from the beginning of reading to the response. Thirty students at each of grades 7, 9, and 11 were subjects. Results of orthogonal comparisons showed no latency differ-

ences between unambigious and ambigious sentences at any grade level. Significant differences at all grade levels favored lexical compared to structural ambiguity. At all grade levels, underlying ambiguity was processed in significantly shorter time than surface ambiguity, an unexpected finding. Orthogonal comparisons for correct responses were quite different. More correct responses were given to unambiguous than to ambiguous sentences in grades 7 and 9, lexical and structural ambiguity differed significantly at grade 9, and at grade 7 responses to surface ambiguity surpassed that of underlying ambiguity. Only at grade 11 were subjects able to interpret all types of sentences equally well. Perception time and correct response scores were essentially unrelated. The IQ was the best predictor of perception time and quality of written composition best predicted correct response scores. Reading rate, reading comprehension, and general language ability were unrelated to ambiguity time or correct responses.

Blount and Johnson (31) sought to determine whether complex sentences embedded within paragraphs are recalled better if in the active or passive voice, and whether recall is better for events described in the same sequences as their temporal order rather than in reversed temporal order. Ten paragraphs of 5 sentences each were constructed in which the experimental sentence occupied each of the 5 positions equally often. Each experimental sentence was expressed in one of 4 ways: temporally correct, active; temporally reversed, active; temporally correct, passive; or temporally reversed, passive. Prerecorded directions were played by each subject, instructing him to listen to the recorded paragraph and repeat it as exactly as he could or to give the content of the phrases and sentences. A trial paragraph was followed by 8 experimental paragraphs. Later, the experimental sentence was scored for accuracy of recall. Each clause was scored separately but 2 paragraphs representing the same conditions were combined. Thus each subject could score 4 points on each of 4 sentence types. Three categories of scores were given: correct, omitted, or semantic recall. There were only 10 errors in 144 sentences in which the semantic ordering of events differed from the original; so this error was not considered statistically. Analysis of variance showed significant (.01) differences between the temporal order conditions with correct order surpassing reversed order. Besides, performance on active sentences differed (.01) from passive sentences with the former being superior to the latter. Only 3 clauses in the active voice were transferred to

passive; the reverse occurred 32 times. The number of sentences omitted in recall was independent of order or voice. A conclusion that was reached was that remembering is based more on semantic properties than on syntactic form.

Powell and Peters (263) tested the hypothesis that college subjects will learn to recognize the recursive quality of semantically supported sentences without feedback. Also they wished to determine the subjects' judgments of the grammatical correctness of self-embedded sentences. In addition to sample sentences and solutions, 20 self-embedded sentences, each containing 3 relative clauses, were the stimulus materials. Half of the sentences were semantically supported and half were neutral. Semantically supported and neutral sentences were divided into groups of 5. Four groups of 20 each read the sentences: group SS-SS had all 10 sentences semantically supported; group SS-SN had the first 5 sentences semantically supported and the second 5 semantically neutral; group SN-SN read all neutral sentences; and group SN-SS read the first 5 semantically neutral and the last 5 semantically supported. Subjects were asked to analyze the sentences into their component phrases. At the end of the test each subject was asked if he noticed a pattern in the sentences and if he thought they were grammatically correct. A score of one was given for each solution in which a subject indicated the proper subject, verb, and object of the 3 relative clauses. The SS-SS group significantly (.01) surpassed the SN-SN group, showing that semantic clues facilitated decoding the sentence. Likewise, all other comparisons of semantically supported and semantically neutral type sentences were significant. Comparing the second with the first half of SS-SS and SS-SN scores showed no transfer from semantic support to neutral sentences. Only 26 of the 63 subjects who answered the question thought that the sentences were grammatically correct.

Moore (230) tested Chomsky's hierarchy of ungrammaticality using both level of grammatical violation and location in the sentences as critical independent variables. In Experiment I, the sentences were divided into 6 blocks of 54 each. The sentence was presented containing a blank where the critical word should have been. Immediately thereafter, a word was presented on the screen and a timer started. The subject had to decide whether the word appropriately completed the sentence and push a YES or NO button which stopped the timer (RT). The ungrammatical sentences had violations in 3 locations: subject, verb, and object. The levels of

violation were lexical, strict subcategorization, and selection restriction — as well as a correct sentence. Filler sentences were used to complete a set. Seven seconds were allowed between the offset of each word and the onset of the next sentence. Twelve college students volunteered to be subjects. Analysis of variance showed significant interaction of Level of violation and Blocks (practice). The more ungrammatical the sentence, the shorter the RT was. The most quickly rejected sentences were lexical. Level by Location interaction was significant (.001) also. There was little difference in RT's when violations occurred in the verb, but the most pronounced difference was found with subject violations. RT's at the object location also differed but less than for the subject. This finding supports the notion that the reader processes subject-verb-object for appropriateness then checks modifiers. The overall error rate was .059 per cent with fairly even distribution over sentence type and location but slightly fewer in the verb than subject or object positions. The direction of error differences paralleled that of RT. In Experiment II, another 12 subjects were instructed to rate each sentence for grammatical acceptability on a scale from one to 20. The data showed strong correspondence to RT data. The more ungrammatical sentences were rated least acceptable. Also there was strong interaction of Level and Location of violation. The coefficient of correlation between mean RT values and mean scale values of each ungrammatical sentence was -.48. The correlation done between the same values for each Level, Location and Type cell was -.86. The data from the 2 experiments support a model of sentence processing of subject-verb-object relations prior to subordinate connections and offers little support for Chomsky's hierarchy.

Paivio and Begg (254) used latency of imagery and comprehension to investigate the effects of concrete and abstract sentences. Both surface and deep structure of sentences were varied to evaluate the effects. In the first experiment, 20 subjects were exposed to 10 trials and 90 sentences, half of which were concrete and half abstract. All subjects were instructed to depress a key to expose, tachistoscopically, each sentence. Ten subjects were asked to release the key when they understood the sentence, while 10 released the key when they consciously pictured what the sentence was about. Time of exposure was recorded in milliseconds (msec.). Analysis of variance showed significant effects of set, concreteness, and the interaction of them. Abstract sentences required more time to image than to understand (.05), and longer time to image than

concrete sentences. In contrast, concrete sentences took about the same time as abstract sentences to understand and image. The coefficient of correlation between comprehension and imagery latency in concrete sentences was .71; in abstract sentences it was .60; over both types of sentences it was .81. These coefficients suggest a strong common factor underlying comprehension and imagery. Experiment 2 used 12 basic sentences in which grammatical structure was varied systematically. Additional subjects read and paraphrased the sentences. Four types of sentences were used: right-branching, and center-embedded, and 2 verb differences to alter the deep propositional content. Thus the basic design was 2x2x4 factorial. Each sentence type was presented twice with verb type altered. Five subjects were given 4 types of instructions: to release the button when they had read the sentence, understood the meaning, pictured what it was about, or could paraphrase it. Another 20 subjects followed the same procedures using artificial sentences. Analysis of variance produced a main effect of set, whether sentence type or verb was altered. Latency increments occurred from reading to imaging to comprehending to paraphrasing. Branching sentences were processed faster (.01) than embedded, and "cease" verbs faster than "prevent" verbs. Coefficients of correlation were imagery and comprehension, .83, imagery and paraphrasing, .76; comprehension and paraphrasing, .79. Reading latency was correlated with imagery .58, with comprehension .66, and with paraphrasing, .44. Partialling out reading markedly increased the other coefficients. Of special interest was the fact that the order of latency of imagery and comprehension in the 2 experiments was reversed. The findings are interpreted as showing that latency of imagery and comprehension depend on a variety of factors, and that presumably, a subject can generate an image while the sentence is being read.

Balser (14) explored the amount of recall and the degree of clustering of specific facts presented in complex sentences, using 2 study-recall trials and a final recall 48 hours later. Twenty subjects read 16 complex sentences, each containing 2 facts in 3 conditions: 1) blocked, or arranged as in the article, and informed, by giving the titles of the 4 articles; 2) informed random, in which sentences appeared in random order; 3) the same as (2) except no topics were given. A fourth group received 16 unrelated sentences, in random order, that could not be clustered. Each subject was given 5 minutes to study the sentences, then 17 minutes to record the information recalled, in complete sentences. Immediately thereafter, a second

study-recall was given. The delayed recall was done without study. The recall score was the number of facts correctly recorded. Separate one-way analyses of variance were computed for the 3 trials, which yielded significant (.01) treatment effects for each trial. Multiple comparison *t* tests revealed that only on the recall did the informed blocked group significantly exceed the informed random group. On all trials, the informed random group exceeded the uninformed random group. The latter group did not differ from the fourth group. A ratio of stimulus category repetition for each of the 3 trials showed significant effects of clustering. The informed blocked group clustered more than the informed random, and the informed random more than the uninformed random. The conclusion was reached that the nature of the material was less important than cueing.

Leicht and Cashen (192) tested the hypothesis that isolation of an item in written prose facilitates its recall. The underlining included 4 each of principles, examples, trivia, or nothing. Questions submitted after reading covered each of the foregoing conditions. Each of the 164 college students served in but one condition, and answered the 16 questions used in the experiment embedded in a regular class examination. The results showed that significantly (.01) more questions were answered correctly on principles than on examples or trivia. There was a marginal interaction (.05 to .10) of underlining conditions and type of material suggesting that the isolation effect on recall is marginal.

Kulhavy (185) investigated the effects of 2 kinds of embedded orienting stimuli (OS), underlined or deleted, using 2 responses, overt or covert, on both critical and incidental information obtained from reading the text. The passage was altered so that each embedded item was repeated twice in the same paragraph. In one condition, the critical statements were underlined; in the other, they were deleted by marking over with black ink. Subjects were asked either for overt responses, writing the cued items on the bottom of the instruction page, or covert responses, paying attention to the cued items. A control group read the unaltered text. Sixteen subjects were assigned to each of the 5 conditions. The criterion measure, given after reading, was 72 questions, half relating to the OS facts and half to incidental facts. No time limits were set on reading or answering questions. The Dunnett test of criterion scores between the control and experimental groups showed that only the subjects with underlined cues, making no response, differed significantly.

No other main effect or interaction reached significance. The results are interpreted to mean that stopping to locate and reproduce cued materials interrupted the text-scanning process causing the learner to bypass adjacent content.

Philipchalk (259) tested the interaction of concrete versus abstract materials with correct English order to the words versus random order of presentation to determine both immediate and long term recall. Four groups of 7 to 12 members completed the experiment with each condition. Two paragraphs were presented on a deck of 80 cards through which subjects flipped at one second per card. Following each of 4 trials subjects were asked to recall, in any order, as many of the words as possible. The same task was called for 2 weeks later. The number of words correctly reproduced after the fourth trial and the delayed response were subjected to a 2 x 2 analysis of variance. The main effects showed thematic presentation was more effective only with concrete materials, both at immediate and delayed recall periods. The findings were interpreted to mean that it is possible to generate a "surrogate structure" retaining the theme or meaning from which the passage may be reconstructed.

In the report by Baron (16), subjects were asked to decide whether one of 4 types of phrases presented them made sense. Set 1 of the phrases were ones that sounded as if they made sense, but did not look as though they did; Set 2 contained ones that sounded the same as Set 1 but made sense; Set 3 phrases did not make sense in any way; and in Set 4, there were matched phrases that did make sense. Each set of 8 phrases was based on a pair of homophones and a matched pair of words differing in the presence or absence of the same letters in the same positions (*kill-ill*). Phrases were chosen in which one member of each pair made sense and the other did not. Two experiments were performed. In the first, students were asked to give an affirmative response if the phrase made sense and a negative reply if it did not. For the second experiment, subjects were to give a positive response if the phrase sounded as though it made sense, and a negative response only if it fell in Set 3. In Experiment I, 6 college students were used in 2 sessions each; in Experiment II, 8 subjects were run for 2 sessions each. In Experiment I, the error rate on Set 1 was 5.1 per cent and on Set 3, 2.4 per cent, giving a significantly greater error rate for Set 1. Differences were found in response time and errors favoring Set 2 over Set 1. Longer response

times and higher error rates were noted for Sets 3 and 4. The author concluded that the quickest way of identifying a word is not by going through an intermediate phonemic code phase but that meaning can be derived efficiently from a visual analysis of the text alone.

Pringle (264) inquired into the general language development and reading achievement of British children who were living in residential care. All children were given the *WISC* as a measure of intelligence. Language development was asscssed by means of the *Mill Hill Scale Oral Definitions Form* for the 11 and 14 year olds and the *Watts English Language and Vocabulary Test for Young Children* for 8 year olds. The *Schonell Graded Reading Vocabulary Test* and the *Schonell Silent Reading Test B* were administered to 8 and 11 year olds and the 14 year olds respectively as an assessment of reading achievement. At all age levels and for both boys and girls, marked backwardness in language development was found for the residential group with severity of retardation related to the age at which separation from the family took place and to the severity of deprivation. Of the residential group, 62 per cent were identified as backward in reading with reading quotients less than 85; and 40 per cent had reading quotients less than intelligence quotients.

Reid (277) tested the effect on comprehension of restructuring sentences found in readers and other texts in a form closer to spoken language. A set of 19 experimental sentences was identified in extension readers used with 7-8 year old Scottish children. The sentences were selected as being deviant from the speech forms used and heard by most children that age and also as being ambiguous in certain respects. For one form of a test, Form A, a question in binary choice form was developed for each sentence (one sentence had 2 questions) in which the incorrect response represented a specific predicted misinterpretation. For the second version of the test, Form B, sentences were rewritten so that the confusing syntactic feature was replaced by a form more likely to occur in children's speech patterns. The rewritten sentence was then followed by the same question as in the other form of the test. The children were from primary schools in a predominantly working class area in central Scotland. A total of 87 children took each form of the test. For Form B, 50 per cent of the raw scores fell between 18 and 20; in Form A, 12.6 per cent of the scores were at that level. The difference between the medians on the 2 tests was statistically significant at the .0005 level.

IV-8 Vocabulary

Johnson, Smith, and Jensen (162) prepared a high-frequency word list based on words in present-day use. Their first source was the Kučera-Francis tabulation of current English in which 50,406 distinct words were rank ordered. Their second source was Murphy's 6,318 words in the oral language of kindergarten and first grade pupils. The 500 most frequently used words were compared with the Murphy list, resulting in 306 words used at least 50 times by children. The 306 words were submitted to 118 first grade and 92 second grade subjects of various socioeconomic levels enrolled in 4 schools. Testing was done individually with each word on a large card; a time limit of 5 seconds was allowed for recognition. The *Clymer-Barrett Prereading Battery* was administered to the first graders early in the year and the *Gates-MacGinitie Reading Test* to the second graders. Both groups were tested on the word list the following spring. The mean correct responses to the word list was proportionate to the socioeconomic levels and to the readiness or achievement scores. Second grade subjects recognized a larger proportion (90 per cent) of the words than did first graders (64 per cent). Likewise pupils ranked in the upper and lower halves of the readiness or achievement tests differed markedly in recognition of the words on the list. The 133 words recognized by 75 per cent or more of first graders are given and the 289 words for second graders are shown. Only 17 of the 306 original words were not recognized by 75 per cent of either first or second grade subjects.

Evanechko and Maguire (88) developed an instrument to index the changes, with age, of preferences for different kinds of definitions for words. Based on the literature, 25 kinds of logico-semantic relations between words and their definitions were identified. The words were chosen from a count of 20 to AA on the Thorndike and Lorge list and, also, grade 4 on the Dale list. The 4 major form classes of words (nominals, verbals, adjectivals, and adverbials) were included. Definitions from those given by children were used wherever possible. When all definitions were obtained, they were paired with each other for comparisons among the 276 pairs of items. Children in fifth and eighth grades were asked to choose their preferred definitions. The definitions were grouped into 5 categories of meaning by 5 judges whose coefficients of agreement were .80 to .95 on all except "explanation," which was dropped. From the data, matrices of proportions were calculated for each

grade level; they were remarkably similar. Then the matrices of proportions were transformed to similarity matrices. Subsequently they were analyzed into configurations by the Kruskal Multidimensional scaling procedure. Four dimensions were chosen for interpretation at grade 5. Examination of the bipolar Dimension 1 led to labelling it Experience-Evaluation. Dimension 2 was called Relation, while the third dimension involved Association. The fourth dimension was called Class-Implied. At grade 8 the first dimension was labelled Class-Association; Dimension 2, Analysis vs. Synthesis; Dimension 3, Experience-Class; and Dimension 4, like that at grade 5, was called Class-Implied. An attempt was made to rotate the grade 8 configuration to fit that of grade 5, but a poor fit was obtained. Thus the conclusion was reached that qualitative differences in the data were identified.

Hodge and Pennington (144) carried on 3 experiments dealing with 3 principles of abbreviation of words in order to determine 1) which was used most frequently with words of different lengths and 2) frequency of usage. In Experiment 1, 48 undergraduate students were assigned to different word lengths, each group of words including different Thorndike-Lorge frequencies. Subjects were asked to construct a personal and a general abbreviation for each word. No limitations were placed on the number of letters nor on work time. The results showed a systematic decline in the percentage of letters used with increasing word length and a larger percentage of letters used in high versus low frequency words. Personal and general words were quite similar. Further analysis showed that 57 per cent of abbreviations were contractions, 38 per cent truncation, and six per cent followed both rules. The median number of different abbreviations increased with word length. In Experiment 2, subjects were instructed to use either contraction, truncation, or both in constructing their abbreviations to the same words as in the first experiment. Again, contraction was the preferred mode of abbreviation and truncation was chosen only when subjects were instructed to use it. As shown previously, word length produced regular increases in the median number of different abbreviations, while the frequencies (Thorndike-Lorge) had no consistent effects. In Experiment 3, 90 undergraduates were asked to reconstitute the original words from the modal abbreviations constructed in Experiment 1. The results showed that reconstruction was best for the medium-length words. Except for males on the shortest words, the mean per cent of correct reconstruction was about 67 for all words. The major finding

was the systematic improvement of reconstructions with increasing word frequency.

IV-9 Factors in interpretation

Spearritt (315) reported the application of newer statistical procedures to the data obtained by Davis concerning the skills involved in reading among twelfth grade students. Whereas Davis identified 8 skills, Thorndike refactored the data and concluded that word knowledge could be distinguished from the other reading tests but that none of the other tests was distinguishable. In Spearritt's study, the investigator sought more than one measure of the same skill which is important in factor analysis. He used scores on Forms C and D of the test as separate measures. This resulted in 16 scores for each student and a 16-variable matrix. Rather than use 988 cases on a single analysis, Sample 1 and Sample 2 (each composed of 494 subjects) were factored for cross-validation. First, Spearritt used the factor analytic procedures by Jöreskog and others to determine the goodness of fit of the 8 hypothesized skills. The fit for Sample 1 and Sample 2 was poor; p values were below .05. Second, an unrestricted maximum likelihood procedure for exploratory factor analysis was tried to determine the minimum number of factors needed to account for the correlations. This procedure yielded 3 factors for Sample 1 and 4 factors for Sample 2. Hypothesized Structure 2, including 4 factors, was tested for goodness of fit and was not acceptable for either sample. Hypothesized Structure 3 eliminated all tests from the correlation matrix except pairs with highest loadings on each of the 4 factors. This structure was acceptable for both samples. The 4 skills were recalling word meanings; drawing inferences from content; recognizing a writer's purpose, attitude, tone, and mood; and following the structure of a passage. In order to pursue the problem further, direct oblimin rotational procedures were applied to the matrices of unrotated factor loadings produced by the unrestricted maximum likelihood analyses for 4- and 5-factor solutions. In addition to Samples 1 and 2, Sample 3 combined all 988 subjects. For each sample solution, Tucker's reliability coefficient was .995 or above. The 4-factor solutions generally identified the same factors reported above. In the 5-factor solution, the factor called recognizing a writer's purpose, attitude, tone, mood, and techniques split into 2 factors cutting across skills rather than consolidating them, in Samples 2 and 3, but not in Sample 1. While 4 factors were finally selected as the best solution to the problem, relation-

ships were indeed marked among the 3 factors other than recalling word meanings.

Johnson (165) used 3 analyses of recall of textual prose to determine the generality of the relationship between meaningfulness and recall. In order to test these relationships, it was necessary to segment the 2 passages and then to rate each segment for meaningfulness. Segmentation was done by about 50 college students who were instructed to partition the passages according to locations acceptable for pausing. Reliabilities of the raters were .97 and .98. Three separate groups of 32 undergraduates rated meaningfulness of the segments, according to ease of association, familiar words, and concrete content. Pausal units of lower meaningfulness were eliminated so that the passage could be divided into quarters on this rating. Subjects were 58 and 46 students who read the passage twice and, either immediately or 7 days later, wrote the textual passage as well as they could. The scores were the number of units recalled. The results of both immediate and delayed recalls showed highest scores for those subunits rated highest in meaningfulness and lowest scores for those ranked least meaningful. Repeated-measures analysis of variance showed relationship between meaningfulness and recall. The Newman-Keuls tests showed all differences to be significant (.001). The second analysis considered the number of sentences recalled, which was also significantly related to meaningfulness. The third analysis dealt with 7-point ratings of pausal units. Regression analysis showed that the various measures of meaningfulness were simply overlapping predictors of recall.

Anderson (5) explored ways of testing understanding — or comprehension — of a principle explained in about 800 words of text. In this experiment with secondary level students, he used test items which were identical with, similar to, or dissimilar to the original passage. The degree of similarity was achieved through examples of the principle of the effects of intermittent reinforcement on subsequent behavior. Four subclasses of similarity were represented by whether the organism was human or nonhuman, whether the response was motor or nonmotor, whether the reinforcer was primary or secondary, and whether or not there was a laboratory milieu. The effects of each reinforcement item on subsequent responses were determined. The results showed that the group receiving experimental passages significantly exceeded those receiving control passages. Differences between identical and similar items were not significant but between similar and dissimilar

items, differences were marked (.05). The results were interpreted to mean that test questions lifted verbatim from text cannot reveal whether the reader understands the text; however, those items which are similar and especially dissimilar are good measures of comprehension of the principle.

McGaw and Grotelueschen (217) studied both the forward and backward effects, on comprehension, of questions inserted in the text at varying distances from the answers, and the relationship of placement to criterion test items. The text was 21 pages of about 260 words each from *The Sea Around Us*. For each page, 3 questions were generated: 2 detail type dealing with the same material and one dealing with an unrelated topic. All 63 questions were completion type. Five groups of 28 subjects each, included 3 experimental and 2 control groups. The first experimental group (E_1) read 6 pages then answered the first 6 experimental questions (EQ); each of the 3 following pages was followed by 3 EQ's, except for the last 6. The second experimental group (E_2), had the first 6 EQ's at the end of 6 pages then 3 at the end of each successive 6 pages except the last 3. The third group (E_3) had 3 EQ's at the end of 9, 15, and 21 pages. One control group (C) simply read the text. A second control group (CQ) had irrelevant questions from a Personal Opinion Scale inserted at the same points as did group E_1. All subjects began the 90-minute period by taking Part II (Reading) of the *Cooperative English Tests*. Then they read the experimental booklets and immediately answered 42 questions, 21 matched with EQ's, and 21 unmatched (T_1). Finally the 21 EQ questions (T_2) were answered. The data were processed to answer 2 questions. The first dealt with the facilitative effects of inserted questions and used data from groups E_1, C, and CQ. On both criterion tests, T_1 and T_2, the E_1 group scored significantly higher than C or CQ groups, showing a general facilitative effect of relevant questions. No significant differences were found between the scores of the C and CQ groups, showing no increased attentiveness following a rest from reading. The forward and backward effects were examined by comparing response to the 12 questions on the first 6 pages (backward) with those 12 from sections following the last questions (forward) in groups E_1 and C. The differences between the groups was not significant, nor was the Group x Sections. An analysis of covariance was performed on criterion questions from T_1 dealing with materials from pages immediately before and after inserted questions. Group E_1 was superior (.05) to Group C. But the important effect was Item

Type x Position x Groups, which was .055, almost significant. Further analysis showed that E_1 group was superior to C on matched items immediately before inserted questions, showing a rehearsal effect. Besides, E_1 group was superior to C on unmatched questions on pages immediately following questions, suggesting increased attention to the text. Moreover, the superiority decreased with increasing textual distance from the insert, differences being insignificant on pages "long" after questions. The second part of the analysis considered Group E_2, E_3, and C as they performed on the criterion test questions. Overall difference between the groups was not significant, but Group x Sections was significant (.002). The performance of E_2 group on pages 7, 8, and 9 was superior to the other 2 groups. E_2 had questions just before these pages, and the results are interpreted as shaping the attention to details. Prior to pages 13, 14, and 15, E_2 had had questions twice while E_3 encountered questions only once; yet E_3 was superior. Since E_3 had questions immediately after this section, the superiority was attributed to review. The data to answer the 2 questions were combined, and results showed again that insofar as subjects's habitual inspection behaviors are inappropriate, inserted questions serve to shape behavior. Such questions also improve the same type of comprehension on pages just before the questions, probably because of review.

Boyd (33) hypothesized that the effects of combining sets of pre-questions (QB) and post-questions (QA) would be additive. To test this hypothesis, 10 experimental conditions and a control were set up with experimental questions (EQ) of both intentional and incidental items. For example, one EQ was inserted before every paragraph (QB_1) or 5 EG's were inserted before every 5 paragraphs (QB_5). Likewise, one EQ came after every paragraph (QA_1) or 5 after each 5 paragraphs (QA_5). The other 6 conditions were combinations of the 4 A and B conditions. Two descriptive passages totalling about 2,000 words were mimeographed on 20 separate pages. Four questions were written for each page (80 in all), one group of 40 designated as intentional (used between paragraphs) and another 40 as incidental (used only in post test). All questions were one-word completion types, apparently calling for details. The subjects were 220 under-graduates, 20 of whom were assigned to each condition. In an analysis of variance the item type had a significant effect with intentional items surpassing incidental. Also Frequency X Item was significant, and the intentional mean for the one paragraph test item was higher than for 5 paragraphs. The finding that there was no

facilitative effect of post-questions was surprising and not in harmony with earlier studies. Moreover, there was no interaction between the frequency of testing and the before- and after-question positions. Repeat-question means were well above all question-once means with a few exceptions. The conclusion was reached that 2 or more questions are more beneficial to learning than one question. A number of analyses were done to determine how the effects of repeated questions combine. Three ANOVA analyses supported the additive hypothesis. To test the notion that attention rather than retention accounted for higher scores on QA, the EQ scores and post test scores were compared. The mean scores for the intentional EQ's significantly exceeded the intentional post test items, showing forgetting during the brief reading period. The forgetting (EQ minus PT) for QA_1 was significantly less than for the average of QB_1 and QB_5 as were the differences between QB and QA_5. However, the differences between QB_1 and QB_5 were not significant, giving strong support for the hypothesis that the QB conditions affect only initial attention and the rate of forgetting will be the same for all QB conditions. The conclusion was reached that repeated questions are additive in that the QB conditions lead to selective attention to intentional and incidental materials while the QA conditions lead to selective retention regardless of what other conditions are combined with them.

Three reports concerned the effects of different kinds of advance organizers on what was learned and retained, for one day, from different selections. Barron (17) used a selection of about 2,300 words dealing with stars because it was related to the science curriculum at eighth grade. Both graphic and prose organizers were used. They reviewed terminology used in making comparisons, related the process of comparing people to that of comparing stars, and introduced various characteristics upon which the comparisons of stars could be made. The criterion test — called the astrology test — was composed of 24 items which had been studied in advance. The 3 experimental groups were graphic organizers, prose organizers, and control. A maximum of 5 minutes was given to the organizers followed by 25 minutes to read and review the passage. The following day all subjects took the astrology test. At each of grades 6 through 12 there was no significant difference between the combined experimental treatments and the control group nor was there any significant difference between the 2 treatments.

A study by Estes (87) sought to determine whether the structured overview proposed by Barron had the same effects as Ausubel's advance organizer and whether the facilitative effects of either device were the function of the relationship between the difficulty of the passage and the reading level of the learner. The subjects were 2 social studies classes from each of grades 8 through 12. All students read a 3,000-word passage dealing with the rise of labor unions in the United States. According to the Dale-Chall readability formula, the grade difficulty was 9.6. The students were randomly assigned within classes to 3 treatments: a short passage concerning industrialization (advance organizer); a short discussion stimulated by a structured overview; and no prereading activity. Twenty-two questions were administered one day after the reading of the passage. Subjects were divided into 4 reading levels: below grade 7.0, 7.0 to 8.9, 9.0 to 10.9, and above 10.9. No significant differences were found among the treatment conditions at any level of reading ability. While the plotted scores show structured overview yielded consistently higher scores than advanced organizers over all 4 reading groups, the control group scored equal to or lower than experimental groups when reading ability was low or high; but when reading ability was appropriate to the passage, the control group scored higher than the experimental groups.

Jerrolds (156) explored the effects of an advance organizer (AO) and a modified advance organizer (MAO) when instruction in use of the organizers was given or when none was offered. The subjects were 84 ninth graders, 12 in each treatment, half of whom had IQ's from 100 to 110 and half with IQ's above 115. The first passage of 1,000 words was used with Groups 1 and 3 to demonstrate the techniques of using a subsumer. On the following day, Groups 1 and 2 were given MAO's for a 1,000-word passage on espionage organizations. Groups 3, 4, and 6 were given an AO designed for the passage. Group 5 was given an equal amount of buffer material with no subsumers. Group 6 received only the AO and the test of delayed retention, while Group 7 had only the test of delaved retention. After a 3-day interval, a 12-item multiple choice test of specific facts was administered. Analysis of means, using the *t* statistic was done, comparing each group with Group 5 (control). None of the differences were significant. Groups given instruction did not differ from those without instruction in the AO and the MAO conditions. Groups 6 and 7 did not differ significantly, showing that the AO itself gave no specific information to improve test perform-

ance. The data showed that the group using the buffer material performed as well as those using AO and MAO. Above-average IQ subjects instructed in MAO performed significantly better than their counterparts given no instruction. No other comparisons in this IQ level were significant. Likewise, no dependable differences were found in the subjects of average IQ.

Mistler-Lachman (228) analyzed levels of comprehension of sentences from lexical to surface structure to underlying structures, using ambiguous and unambiguous sentences. The material was 432 items equally divided among the 3 levels of ambiguity, with an equal number (108) unambiguous. Of the unambiguous sentences, 36 were derived from each ambiguity level, with subdivisions of various types. In order to allow judgment of meaningfulness, meaningless distractor sentences were derived from the original set. Three of the 5 tasks used 5-word context sentences preceding the target sentence. The context was appropriate to either of the ambigious meanings, except for one set which was inappropriate. The 5 tasks were meaningful judgment (no context), meaningful judgment (with context), context integration, production (no context), and production (with context). Time for response was recorded both by automatic printer and by hand. The entire session required about 2 hours for each subject. Unique combinations of factors were represented 3 times, and latency represented the median time. The first analysis of variance was performed on the unambiguous sentences. The only effects were that negative were faster than positive and the slowness of the productive task was significant; but there was no main effect of the ambiguous model and no interactions with it. This permitted treatment of all ambiguous sentences as a single group. The second analysis of variance considered the ambiguous sentences. Task was highly significant. Anticipated mean latencies increased as follows: meaningful judgment without context then with context, context integration, and production without then with context. Ambiguity had a significant effect with all kinds of ambiguous sentences slow relative to unambiguous ones. Of special interest was the fact that comprehension for meaningfulness was relatively insensitive to ambiguity. Second, lexical and underlying structural ambiguities seemed to result in similar means in most tasks. Third, context integration and production with context interacted similarly with ambiguity. The conclusion was reached that because subjects can determine that a sentence is meaningful without resolution of ambiguity, this is a shallower task. Comprehension for production

and for context integration appeared to initiate similar depths of comprehension when accompanied by context, although the production task was more complex when done without context. Surface structural ambiguities appeared to be resolved earlier than lexical and underlying structural ambiguities which were resolved at the same time, perhaps requiring an inferential process.

Crouse and Idstein (67) sought to determine the effects of encoding cues, especially underlining, on what was learned from reading. Four conditions were 1) control (told to study); 2) learn answers (LA), parts of passages which answered output questions were underlined; 3) generate questions (GQ), underlined parts were designated as answers and students asked to think of the question and remember the answer; and 4) read question (RQ), the same as GQ except that each output question was presented following the underlined part of the text. Two possible influences also studied were the study time and the number of passages learned. Three short factual passages with 22 questions developed for each passage were used. Passages were counterbalanced and each subject learned all 3. The number of correct answers given by each subject on each passage was the base for analysis of variance. The overall F was not significant for the experimental conditions. However, conditions LA and GQ were higher than the Control at 2 and a half minute study interval and the 2 conditions plus RQ were higher at 5 minutes. Significant differences were found between scores, under all conditions, of the second passage over the first. No significant differences in conditions were found when comparisons were made between the highest and lowest scores or between performance on the most difficult and easiest questions. In Experiment II, a single longer selection of about 6,000 words was used, with 30 questions, and 2 conditions: underlining answers to questions and no underlining. Time for reading was 25 minutes and no time limit was placed on answering questions given immediately after reading. Mean number of correct answers for the Control group was 9.24 and for the Experimental group, 17.30, a marked difference. When the 33 subjects were divided into 3 equal groups on the basis of the number of correct answers, highly significant effects of "ability" and underlining x "ability" were found. Underlining was of much greater help to students who were fast and medium than to slow readers. The authors noted the marked contrast between encoding information underlined by the experimenter and that done by the students, according to a number of studies.

Idstein and Jenkins (149) carried on 2 experiments to determine the efficacy of underlining in comparison to rereading. In the first experiment the material was a 1,200-word passage about local governmental procedures. Four groups of subjects included underlining-review, time 9 minutes; underlining-review, time 4½ minutes; rereading-review, time 9 minutes; and rereading-review, time 4½ minutes. On the first day, subjects were allowed 10 minutes either to read and underline or to read and reread. A week later, each of the 2 groups was allowed 9 or 4½ minutes to review before they answered a 24-item completion text. A 2-way analysis of variance showed no significant difference in the mode of study but a significant difference favoring the 9 minutes of review time. There was no significant interaction of the 2 variables. In the second experiment, the materials were a 6,000-word introduction to *Education and Philosophical Thought*, in which topical sentences were developed so that it was not fact-packed. The conditions were underlining versus rereading, but a third group was tested without reading the material. All subjects were allowed 50 minutes for study and 15 minutes for review a week later. The dependent measure was a 31-item completion test. The t-test showed no significant difference between the underlining and rereading groups, but both were significantly superior to the group that was tested only. The conclusion was reached that underlining was no more effective than rereading, even for long passages.

Myrow and Anderson (235) determined whether various types of multiple choice tests were equally sensitive to retroactive inhibition of prose similar to that of paired associates. Materials included an original learning passage of 2,240 words, an interpolated learning passage of 2,190 words, and an unrelated interpolated passage for control. All passages were judged to be between grades 6.6 and 6.9 in readability. Ten multiple choice items assessed retention of response-same, 10 assessed neutral information, and 14 assessed response-different materials. The stems of the questions were identical, but the foils varied. For the specific-both group, the alternatives for the response-different items included the correct response, the corresponding specific interpolated learning response, and one nonspecific distractor from each of the original and interpolated learning passages. For the nonspecific-both group, alternatives were the same except for one change of a nonspecific response on the interpolated learning passage substituted for the response-different item. The response-different items from the original

learning-only group were the correct response and 3 distractors from the original passage. Distractors for response-same and neutral items were identical for all tests and included distractors roughly equally distributed between the original and related interpolated passages. Scores for the multiple choice test were rights minus one-third of the wrongs. The short-answer test was completion type and scored according to a predetermined key. An 11-item questionnaire asked about students' study strategies with the 2 types of passages and their interest in them. The *Wide-Range Vocabulary Test* was used to assess verbal ability. The students, mostly high school sophomores, were assigned randomly to the related and unrelated interpolated materials. After reading the second selection, students answered the questionnaire. Eight days later, the 4 types of tests were distributed equally throughout each section. An unweighted means analysis of variance for the combined specific-both and short-answer test groups showed no overall effect of interpolated learning, but an interaction with item type was found. No significant superiority of the related-interpolated learning group on the response-same items was found. There was evidence of slight, but nonsignificant, nonspecific interference on neutral items. Comparisons of scores on the specific-both test for the related-interpolated-learning and the unrelated-interpolated groups showed significant (.01) differences. Further comparisons showed significantly (.01) lower scores on the multiple choice specific-both versus original learning only test. Analysis of types of errors made on response-different items showed that subjects who had read related interpolated passages chose the specific competing interpolated responses about 2 and a half times more frequently than those who had received unrelated interpolated passages. In addition, the specific competing interpolated responses were chosen more than twice as often as noncompeting interpolated or original passage responses. The questionnaire revealed more careful study of the original passage. Verbal ability was significantly related to performance on the criterion tests. The evidence from this study suggests that competition between specific original-learning and interpolated-learning responses accounts for a great deal of the forgetting ascribed to retroactive inhibition.

IV-10 Oral reading

Shankweiler and Liberman (300) performed a number of studies to determine the sources of problems of misreading. The

first study examined the relationship of ability to pronounce words in a list to accuracy and reaction time in oral reading. Two lists of monosyllabic primer words were constructed 1) to permit optical ambiguity (reversible words) and 2) to permit perception of sounds in words. The coefficient of correlation between the 2 lists was .73. The *Gray Oral Reading Test* was used to assess words in context and oral reading. The subjects were Group A: 20 average second grade boys, Group B: 18 third graders in the lower third of their class, Group C: an entire third grade class, and Group D: 20 fourth grade boys. Coefficients of correlation — for all but Group C — between performance on List 1 and the Gray test were between .72 and .77. For Group C, the coefficient was .53 with List 1 and .55 with List 2. Latency measures were taken for List 2; they correlated -.68 with accuracy on the word list. Likewise, the authors report negative correlations between latency on List 2 and errors on the Gray test. The authors suggest that if too much time is required with a given word, the preceding words will be forgotten before the unit is completed. A second aspect of the study was the analysis of reversible words and letters in List 1 devised to maximize these errors. Group B, poor readers, were the subjects. Sequence reversals accounted for 15 per cent of total errors; orientation errors, 10 per cent; consonant errors, 32 per cent; and vowel errors, 43 per cent. Test-retest comparisons showed that reading errors other than reversals were fairly stable while reversals were unstable. There was a wide range of individual differences in reversal errors. Sequence reversals correlated significantly with other consonant errors, vowel errors, and performance on the Gray test; but none of these tests correlated with orientation reversals. Analysis of the nature of substitutions among reversible letters *b*, *d*, *p*, and *g* showed much less confusion when the letters were presented singly, even quickly in a tachistoscopic exposure. Moreover, these letters were not confused symmetrically during word reading. A review of other studies dealing with cerebral dominance was given. Error patterns in Lists 1 and 2 were analyzed by segment position in the word. In List 2, each of the 25 consonants and consonant clusters appeared 8 times, while each of the 8 vowels occurred about 25 times. The findings were consistently that final consonants were more often misread than initial ones and that there were more errors on vowels than on consonants. In order to explain such a pattern, 10 clinic cases listened to and repeated the words. The results showed far fewer errors and the distribution revealed that it was not possible to predict the error

rate in a phoneme in reading from its error rate in listening. For example, vowels were seldom misheard but often misread. An explanation for the difference is that pupils speak whole words and are not aware of segmentation, and that in speech, vowels are more intense than consonants although there is no difference in print. An analysis of the vowel errors of 11 retarded readers at third grade showed a correlation (rho) of .83 between each vowel's ranked difficulty and the number of orthographic representations in List 2.

Rosen and Ames (283) explored the effects of black dialect features on oral reading of pupils ages 8 through 13 years. School data on the 86 subjects included the IQ from the *California Test of Mental Maturity* and reading scores from the *California Achievement Test*. The investigators had each subject read the 15 standard English sentences developed by Baratz. These permit 8 different syntactical and grammatical changes considered characteristic of non-standard black dialect speech. Pupils' oral reading was tape recorded and later analyzed according to the presence or absence of each of the 8 features. Only 4 of the features were found in this population: third person singular verbs, past verb markers, possessive markers, and noun plural markers. An analysis over the age levels revealed a significant change in only the past verb markers with a decrease from younger to older groups. No significant sex differences appeared on any of the 4 features, and no relationships were found among high, medium, and low intelligence groups. However, the low silent reading group demonstrated significantly more dialect-based responses than the medium or high groups in third person verbs, possessive markers, and plural nouns.

Ohaver (248) analyzed the oral reading miscues of 15 college students who were ranked higher in vocabulary than in comprehension with an equal number who were ranked higher in comprehension than in vocabulary. Both groups were low in performance on the *Nelson-Denny Reading Test* (at or below the 35th percentile). The 3 instruments for testing included 50 of each: sentences, semigrammatical sentences, and ungrammatical strings. They were arranged into the form of a paragraph. Scores were the number of miscues made on content words and of corrections made. The results showed that higher comprehension subjects used both semantic and syntactic structure while the higher vocabulary subjects used mainly syntactic structure. Wilcoxon's Signed-Rank test showed this finding to be significant. Analysis of corrections revealed that both groups made a similar number. However, an in-

crease in linguistic structure produced a decrease in corrections for higher vocabulary subjects. From these findings, the investigator produced a scheme of Linguistic Performance suggesting the source of the difference between the 2 groups.

King (174) investigated total presentation time and methods of oral reading on the learning of a passage of connected discourse. The presentation times were 10, 20, and 30 seconds; the methods of reading were paced (word by word with no breaks); normal linguistic breaks; and abnormal linguistic breaks. Each of the 3x3 cells contained 5 males and 5 females. The passage was played from tape in the appropriate manner after which the subject wrote a recall. This procedure continued until a perfect recall occurred. Total learning time and number of trials were recorded. Also, the number of words and the number of 3-word sequences were determined. Significant differences were found for sex (females faster), method of reading, and the interaction of the 2. Also, total learning time interacted with sex, time, and method of reading. Total presentation was found significant for the different rates of presentation as follows: 10-sec., 43.3; 20-sec., 69.3; and 30-sec., 101.0. On the first trial, mean sequences recalled were as follows: paced, 8.3; normal, 9.1; and abnormal breaks, 6.0. The primary finding was the influence of linguistic structure on total learning time.

Lane and Grosjean (188) examined a speaker's perception of his own rate of reading and also the listener's perception of a speaker's rate of reading. The extent of change in articulation rate and in frequency and duration of pauses as the speaker changed his rate were also studied. The 12 graduate students were each asked to read a 51-word, 75-syllable passage at normal rate. To this rate, a numerical value of 10 was assigned. A series of values (2.5, 5, 10, 20, 30) was then named in irregular order, 8 times each, and the speaker asked to read the passage at the appropriate rate. Listeners heard a recording of the experimental passage read at 162 words per minute. A value of 10 was placed on this standard. Then the listener was asked to assign a number proportional to its rate to each of 40 recordings in which 5 rates of reading were presented 8 times. Tracings from an oscillographic recorder were used to yield the number and duration of pauses and stretches of speech between pauses. The autophonic (self) perception of rate was plotted on a graph and the straight line of best fit was found to have a slope of 2.58. The extraphonic (listener's) perception of rate was fit by a straight line with a slope of 1.5. When a speaker doubled his reading rate, he perceived

a sixfold increase, whereas a listener perceived less than a threefold increase. Thus it appeared that sensation grew more rapidly for the speaker than for the listener. It was also felt that the evidence showed that the speaker relied more on interoceptive cues than on hearing in judging his own reading rate. It was also found that the speaker changed pause time more than articulation time in achieving a rate increase. Pause time was shortened to increase rate by pausing less frequently. When the reader slows down, he adds pauses after content words, and inserts pauses after function words and after syllables within a word only as a last resort. Similarly, the reader subtracts pauses at strategic syntactic locations in increasing rate.

IV-11 Rate of reading

Applebee (7) hypothesized 4 speeds of reading and then developed a test of the first one. The 4 speeds are 1) recognition of "sight" words, 2) sounding out or decoding, 3) processing decoded verbal materials, and 4) ability to increase speed by using redundancies, structural cues, and knowledge of purpose. The experimental test used only written numbers, followed by 2 Arabic numerals from which one was asked to mark the one corresponding to the written number. Two columns of 25 items, grouped in sets of 5, comprised the 2 halves of the test, each timed for 45 seconds. In addition, subjects were given the *Gray Oral Reading Test*; the *Wide Range Achievement Test*, subtest of Spelling; and the *Gates-MacGinitie Reading Tests*. School records provided age, grade, and IQ. Other tests included cognitive and perceptual measures; the Vocabulary subtest of the *Wechsler Intelligence Test for Children*, a sound blending test, and one on Marking, a measure of reaction time. Subjects were between the ages 6-0 and 14-0, including many retarded readers, some matched with siblings who could or could not read adequately. The reliability of the test — determined by correlation of the 2 halves — was .934. Coefficients of correlation among the reading variables were high to moderate, with a mean of .70. However, the experimental rate test yielded low correlations with other reading tests, the highest partial correlation being .389. The measures of perceptual speed, especially Finding A's and Identical Pictures, correlated .703 and .726 respectively with the Rate test. The relationship with marking was lower: .569.

Carver (50) evaluated the test used earlier by Liddle, developing a humorous vein called "clairvoyant reading." Essentially, 6 of

the author's associates took the tests on *The Pearl* and *Principles of Sociology* without reading the texts. The clairvoyant readers had 51 and 57 per cent correct answers on the fiction and non-fiction respectively. These per cents compare with 68 and 68 for speed readers and 82 and 72 per cent with normals. The results strongly suggest that the tests were inadequate for comprehension.

Morasky (231) tested the hypothesis that visual fixations would be more numerous if questions were placed after, rather than before paragraphs. Ancillary effects on other aspects of eye movements were examined also. Eye movements were recorded by the Biometrics Reading Eye II. Twenty paragraphs, ranging from 49 to 203 words, were used. The information needed to answer 10 questions was in the first half and that to answer the other 10 was in the last half. The 30 subjects were divided into 3 groups. Subjects in the Question Before — First Group (QBF) had questions 1 to 10 preceding each paragraph followed by questions 11 to 20 following each paragraph. For the Question Before — Second Group (QBS), the order of questions was reversed in relation to the paragraphs. The third group had only the paragraphs with no questions (NQ). There were no time limits and no feedback to subjects. The dependent variables were the number of fixations, the number of regressions, and the time per paragraph. The differences in time to complete paragraphs 1 to 10 among groups QBF, QBS, and NQ were not significant; nor were there significant differences in the number of fixations. The same lack of differences were found on paragraphs 11 to 20. Comparing the QBF and QBS groups by paragraph, the QBS group required a significantly longer time to complete the first 7 paragraphs and paragraph 9. Moreover, the QBS group made significantly more fixations than the QBF group on the first 7 paragraphs and made a larger number of regressions on most of them. Coefficients of correlation were calculated among 5 variables: words per second rate, fixations per second rate, fixations per word rate, time to complete reading, and regressions. The coefficients were calculated for each paragraph by each subject for each group. Significant negative correlations were found between regressions and words per second for both groups except QBF for paragraphs 11 to 20. Regressions and fixations per second were not significantly related. Positive and significant correlations were found between regressions and both fixations per word and time to complete reading for both groups over all paragraphs. Only the QBF group showed a significant negative correlation between fixations per word and fixa-

tions per second for the first 10 paragraphs. Both groups showed positive correlations between fixations per word and time for the first 10 paragraphs but not for the last 10. The results showed that more visual fixations occurred when questions were placed after paragraphs than when placed before them, and when required reading time was significantly greater. The conclusion was reached that subjects viewing questions before paragraphs behave more efficiently than those viewing the same questions after paragraphs.

Maxwell (211) discussed *skapa*, a 3-step process for explaining the ability to skim or read at high speed. The 3 steps are selecting clue words, labeling or categorizing clue words, and constructing the main idea from the labels. After a theoretical discussion of *skapa*, a report was made of some aspects of instruction in its use and problems encountered. The first step, selecting clue words, was accomplished by short practice demonstrations. Then subjects were given a passage, told to read the title and fix it in mind, then to look at (but not to read) the first paragraph and record 2 or 3 words that appear to "pop" out of the text. The same procedure was followed with each paragraph, controlling time to avoid reading. The next step was to write one-or 2-word titles for each paragraph without looking back. Finally, from the paragraph titles, subjects were asked to write the main idea of the passage. Materials without topical headings and other obvious clues were preferred. One satisfactory selection was *The Image* in which the author provided many clues, including 17 capitalized place names and 35 common nouns denoting space or place. Contrasting behavior of 2 subjects showed that one could label the word-clues selected but could not fit them into a reasonable scheme. Instead the words were strung together in a sentence. Some problems noted in the 30 cases were 1) selection of key words other than nouns (for example, prepositions); 2) difficulty in categorizing word clues, sometimes because of inability to reject inappropriate clues and other times because of idiosyncratic labeling; and 3) inability to conceptualize or to abstract from the words a main idea. The data support the conclusion that rapid readers with good comprehension can bypass some steps in *skapa*, while slow readers and those with poor comprehension exhibit some or all of the problems listed.

IV-12 Other factors related to reading

Three investigations dealt with children's notions of words and word boundaries. Kingston, Weaver, and Figa (176) carried on a

series of short experiments to determine first grade pupils' understanding of the nature of a *word*. In the first experiment, 3 conditions included 1) basal reader words, with 15 sentences and phrases from preprimers and primers; 2) nonsense words formed from the basal reader materials; and 3) sentences from an adult novel. Fifteen subjects were assigned to each condition, given strips of paper and scissors, and asked to cut the strips of paper into words. Many of the observed errors did not fit the categories previously developed by Meltzer and Herse, although this framework was used too. Findings showed a significantly larger number of errors on the adult novel materials than on the basal reader and nonsense words. The most common error was combining 2 or more words, usually one-letter words with others. The adult novel materials resulted in all types of errors except equating a letter with a word. Not only did pupils disregard printer's spaces as boundaries, but there also was failure to achieve any meaning. The fact that shorter units in the first 2 conditions were equated in word length suggested that the problem might be longer words rather than just printer's space. The second experiment involved 3 conditions: 1) listening to the sentences, 2) seeing the sentences typed on paper, and 3) listening to the sentences recorded on tapes. Pupils were given a number of wooden cubes and asked to place the number of cubes representing the number of words seen or heard. The highest scores occurred over the visual presentation with the lowest standard deviation. In the aural and taped presentations the number of words was consistently underestimated while in the visual, the words were overestimated. The third experiment used a tape consisting of human words and human sounds. The children experienced difficulty distinguishing between words and sounds. The fourth experiment included compound words (*e.g.*, baseball) versus 2-word pairs (*e.g.*, ball, game). Considerable confusion was shown in this test. The fifth experiment used 12 taped sentences with both sounds and words, and pupils were asked to count the number of words. This task appeared too difficult for the pupils. The results are interpreted as suggesting that in oral language pupils do not need to learn word boundaries, but only as pupils learn to read do these concepts of a word become useful and learned in relation to language.

Holden and MacGinitie (145) explored kindergarten children's conceptions of word boundaries in speech and the degree of correspondence between oral and written word boundaries. The subjects ranged in age from 5-4 to 6-8 near the end of the school year. Each

child had 12 to 20 phrases or short sentences to segment. Eight poker chips were aligned horizontally, and pupils were shown how to move a finger from one to the other as each word was said, repeating after the examiner. In Experiment I, the results showed that function words were less frequently isolated than those with lexical meaning. Usually the function word was combined with the content word that followed it. About 75 per cent of children segmented content words correctly, whereas only a few pupils could complete the entire test satisfactorily. In Experiment II, 57 of the 84 subjects who could count were taught how to identify the correct numbers of printed nonsense or real words. Cards from which subjects chose the correct number of words contained 3 foils, each of which involved printing syllables as words or combining words. Even though children were taught about the white space bounding printed words, only 5 of 33 subjects receiving one form and none of 24 using another form segmented 4 or more of the utterances conventionally and also identified the proper visual representations. In general, kindergarten children's conceptions of word boundaries reflected linguistic rather than conventional definitions of words.

Replicating an earlier investigation of beginning readers' ability to identify word boundaries, Christina (57) selected 67 first graders and assessed performance on 9 separate tasks during the last month of grade 1. Subjects were asked to identify words and word boundaries, and numbers and to indicate concepts of part-whole. In general, findings of the original study were supported in that some sequential development of the concept of word boundaries appeared evident, ranging from the equation of words and letters to the understanding that space is the determinant. One category, that of dividing words at the tall letters, was clarified by Christina's followup into 3 developmental parts: 1) division at small words, 2) correct division between 2 parts of a compound word, and 3) division elsewhere. Consequently, an 8-part classification scheme for word divisions was proposed, rather than the 5-part developmental classification of the original study. Analysis of error by reading group revealed that the error of combining 2 words was most prevalent in the 3 highest reading groups. A total of 24 out of 67 children made errors when asked to differentiate numbers, letters, and words. There were indications that the percent of error decreased as the reading level increased. Of the 69 children asked to conceptualize the number of wholes when given the parts, 49 made at least one error. Per cent of error increased as items became more separated by

space and orientation.

Stennett, Smythe, and Hardy (320) chose guessing as a measure of Kagan's cognitive style, then investigated relationships between these measures and reading skill development with attention to socioeconomic status. The subjects were 53 per cent boys in grade 1 and 58 per cent in grade 2, all from innercity schools. A large battery of tests was given to determine reading skill development at the end of the school year. They included allographs, word recognition and decoding, visual segmentation, visual template (ability to recognize the 26 letters with decreasing amounts removed), phoneme-grapheme recognition, letter naming, and auditory blending of both syllables and phonemes to words. Four other measures were 1) teachers' ratings of oral reading achievement, 2) socioeconomic status, 3) reading error types, and 4) guessing ratios (GR). Errors on decoding were classified as graphically constrained (obviously similar correspondence to stimulus word), non-graphically constrained (no apparent relationships), and adding, deleting, reversing letters, etc. The last type of error was not considered in the study. GR's were calculated from the first 5 tests of reading skill development by a formula which considered the relationship of the number of correct responses to the total number of responses. These GR's were considered to be measures of reflection-impulsivity. To test the GR's, a factor analysis was made of scores on the 5 tests. The analysis produced one factor with loadings from .59 to .80. Coefficients of correlation of teachers' ratings of oral reading with scores on the subskills tests were moderate (.47 to .65) except for a .78 with the number of words decoded correctly. Grouping subjects into 4 groups by the number of words decoded and comparing GR's for the groups, the data showed that children with low GR's tended to make higher proportions of graphically constrained decoding errors and relatively fewer non-graphically constrained errors. Analysis of GR's by socioeconomic levels suggested that the lower level groups were less reflective and developed less mastery of words than those of higher levels. The conclusion was reached that this study supported Kagan's cognitive style as an influence on reading tasks.

Duffy, Clair, Egeland, and Dinello (80) examined the relationship of psycholinguistic abilities, intelligence, and visual-motor skills to achievement in reading and arithmetic at third, fourth, and fifth grades. The subjects had been studied as first graders by Egeland and all who remained in school were in this study. The tests

were the *Wechsler Intelligence Scale for Children (WISC)* the *Bender Visual Motor Gestalt Test for Children* (3ender), and the *Illinois Test of Psycholinguistic Abilities (ITPA)*. The *Iowa Test of Basic Skills*, (Vocabulary, Reading, and Arithmetic) were the criterion measures. The coefficients of correlation between the independent variables and the criteria at each grade level were moderate. Examination of the relationships of the *ITPA* subtests to achievement showed that Visual-Motor Association was the only one with significant coefficients across all criteria. However, Automatic-Sequential and Auditory Decoding were significantly related to achievement in third and fourth grades but not at fifth grade. Motor Encoding and Visual Decoding were not related to the criteria. Multiple correlation and beta weights showed that the *ITPA* was the only independent variable contributing significantly at grade 3. Using the subtests of the *ITPA* in the multiple correlations at third grade, the Visual-Motor Association and Auditory Vocal Automatic subtests were the principal contributing factors in predicting Vocabulary. However, Auditory Vocal Automatic and Visual-Motor Sequencing added to the prediction of the Reading subtest, while Auditory Decoding and Visual-Motor Sequencing were significant factors in predicting Arithmetic. At fourth grade, the Vocabulary subtest was significantly associated with IQ and the Auditory Vocal Automatic and Visual-Motor Association subtests of the *ITPA*. For Reading, Visual-Motor Functioning, Auditory Vocal Association, and Visual-Motor Sequencing were found to contribute significantly. At fifth grade, another change appeared. Here, Visual-Motor Functioning contributed to Vocabulary, and that subtest plus Auditory Vocal Association were predictors of the Reading subtest. Thus the conclusion that a variety of factors contribute to reading achievement was reached, and that these factors differed at different grade levels.

Stennett, Smythe, Pinkney, and Fairbairn (321) reported 3 studies of eye movements as they related to psychomotor skills and other subskills in learning to read. In the first experiment, a set for speed was introduced to determine whether eye movements would be more efficient, less variable, and reach earlier asymptotes. Eye movements were photographed with the EDL Reading Eye, using 2 sets of digits copied from Gilberts' earlier study. Two unspeeded trials were followed by 2 speeded trials for 5 subjects from each of the first 4 grades. Another 62 subjects had only 2 speeded trials. Comparisons of forward fixations, number of reversals, and average

duration time were made using the *t* test, and significant improvements were found for all speeded measures except number of reversals. Likewise the variability decreased. Coefficients of correlation between 2 sets of unspeeded measures ranged from .75 to .83; between 2 sets of speeded conditions, .51 to .86; but between speeded and unspeeded conditions, .13 to .48. The conclusion was reached that introducing a set for speed yields results approximating the subjects' oculomotor skills. Comparisons with Gilbert's data showed several differences, particularly in changes from grade to grade. Analyses of variance showed only duration of fixations decreased significantly in the present study. In experiment II, the same subjects copied all upper- and lower-case printed letters without time limits. Three scales were devised to reflect the subject's fine motor control. A second motor measure used stick-figures, one of which had a downward mark at the end of the left arm. Pupils were asked to mark each little man that has something in his hand. This test was timed and designed to reduce cognitive, discrimination, and gross motor abilities and to measure oculomotor skill. The third test, given one week later, asked pupils to mark as many figures on one page as possible in one minute. Coefficients of correlation and reliabilities of these 3 tests and the eye movement measures were calculated. The reliabilities of the latter were low except for duration of fixation (.63). Most of the motor tests correlated significantly but moderately with each other but did not correlate significantly with eye movement measures, except for duration of fixation with the cancelling test (-.28 to -.51). In the third study, eye movement and motor measures were related to age, sex, teacher's ratings of oral reading, and 9 subskills involved in reading: memory for phonemes, phonic blending, auditory segmentation, sight vocabulary, visual segmentation of digraphs, knowledge of letter-sound relationships, recognition of letters, knowledge of letter names, and visual letter template strength. An intercorrelation matrix was factored and rotated. Ten factors resulted. Most of the reading subskill tests, teacher's ratings and age loaded heavily on the first factor. Two motor tests, cancelling and motor speed, also loaded on this factor. Eye movement measures loaded consistently and substantially on another factor. These results were interpreted as meaning that eye movements were well developed early in school years and that eye movements in reading result from, rather than cause, good reading.

Abrams and Zuber (2) examined the saccadic eye movements during reading to isolate oculomotor functions from text informa-

tion processing time. Specifically, position processing time was separated from both text and position processing. In order to provide less text to process, blank spaces were placed randomly throughout the 150 words of text. The apparatus for photographing eye movements was an infrared light reflected from the front of each subject's eye. The reflection produced a pulse signal which was fed into a digital computer. The first 12 subjects read 2 normally-printed texts. Errors in return sweep to the next lines of print were measured as was time for refixation, when necessary. The fixation time at the end of the line, presumably to prepare for a return sweep, was also measured. The mean duration of the last fixation pause per line was 178.4 milliseconds (msec.) as compared to average pause duration for the text of 254.8 msec. Refixation time when there were errors in the return sweep was 174.0 msec., quite similar to that at the end of a line. For subjects who read the *Spaced Text* materials, few fixations were found inside the spaces but within 3 letters of the beginning of the space and near the beginning of the word following the space. The mean overall fixation pause duration for the *Spaced Text* was 216.5 msec., but prior to movements across space, it was 183.1 msec. The similarity of pause time prior to movement across text to positioning at the end and beginning of lines of normal-spaced print was marked. By forcing position pauses, it seems likely that the time for processing textual materials can be separated from position processing.

Anderson (6) reported an exploratory study of the role of self-directed activity (SDA) in learning to read. SDA was determined by a device for recording behavior in the classroom. Any verbal or nonverbal activity not clearly directed by the teacher was considered SDA. Negative or disruptive behavior was not considered. In addition to recording instances of SDA, a qualitative rating of 1, 2, or 3 was used to rate the activities from routine to higher-order questioning. Each observer could record data for 5 pupils in 10-second intervals. The sample of 157 pupils was observed individually for 20 minutes on each of 2 days. Both the researcher and an assistant observed and recorded to determine the reliability of raters. After the rating, subjects were taken from the classroom and taught a basal reader lesson using the Directed Reading-Thinking Activity strategy. Their responses were recorded and later rated by the Ohio Study Quality of Pupil Response Scale. Children supplied information on family mobility and ordinal position in the family. The remaining 22 variables (unnamed) were taken from school records

and from a SDA rating by classroom teachers. Observer agreement, stability, and reliability of the SDA were reported as .89, .64, and .73 respectively. However, no significant level of stability could be obtained for the non-verbal dimension of SDA. A coefficient of correlation of .19 was found between individual SDA and the quality of the class response level. Class group SDA level correlated .60 with class group quality of response to the teaching situation. Class group SDA level correlated .25 and .22 respectively with verbal and performance IQ (no test named), and -.26 with race. Individual verbal SDA correlated .22 with reading achievement. Analyses of variance showed that among higher SDA level groups, teachers' estimates of SDA level were significantly lower for boys than for girls. However, among lower SDA level groups, the opposite sex relationship was found. Lower level SDA groups were found to contain a higher proportion of black pupils. Sex and mobility interacted with IQ and chronological age. Boys from highly mobile families tended to be older and of lower IQ than their counterparts from non-mobile families. However, girls from mobile families tended to be younger and have higher IQ's. A 3-way interaction showed white girls who were members of higher SDA groups to be higher than males in individual SDA levels whereas the opposite was true for blacks.

Wood and Haase (362) sought to determine the effects of interaction analysis as a research tool, using 3 factors with seventh graders: teacher sex within school, student sex across pre- and post test measures, and 2 treatments across the 2 measures. Two schools participated in the study; an experienced female reading teacher taught 2 groups in School 1 while in School 2 an experienced male teacher taught both groups. The students were a restricted sample of average reading ability, with 5 boys and 5 girls randomly assigned to each class in each school. The 2 treatments were 30 reading lessons selected from 3 current seventh grade basal reading programs and an equal number of lessons based upon 3 widely used social studies texts for that grade. Pre- and post tests were 2 forms of the *Sequential Tests of Educational Progress*, Reading Test, Junior High level. A 2x2x2x2 mixed factorial design was used for analysis of variance. The main effects for the between subject variables and the interactions were not significant, but the main effects for the within variable and interactions were significant. Inspection of means showed that all groups performed better on the post test than on the pretest. Subjects in School 2 with a male teacher scored higher than those in School 1 with a female teacher, even though no

main effects for school were found. Some disordinal interactions were found. Second order interactions revealed that in School 1 both treatments resulted in positive reading gains, while in School 2 only Treatment 1(basal program) produced significant learning. Girls and boys in Treatment 1 and boys in Treatment 2 performed better on the post test, while girls in Treatment 2 performed less well. The third order interactions showed that in School 1, Treatment 1, both boys and girls improved but girls surpassed boys on the post test. In Treatment 2, School 1, girls improved markedly while boys scored slightly lower on the post compared to the pretest. In Treatment 2, School 2, boys increased performance on the post test while girls dropped significantly. Although the conclusions drawn were tentative because of the sample size, the results showed the possibility of obtaining considerable information from data which may be untapped by less sophisticated statistical techniques.

IV-13 Factors related to reading disability

Bell and Aftanas (19) sought to identify preschool tests capable of predicting reading retardation in the first grade. Their subjects were 131 of an original group of 142 children about to enter first grade in an area where "good-average" socioeconomic and cultural conditions prevailed. A total of 17 independent variables were included. In addition to chronological age, the Stanford-Binet, the Goodenough Draw-a-Person, and a closure test were used. Also included were the Hooper Visual-Organization, the Rorschach, Vineland Social Maturity Scale, Bender-Gestalt, Ellis Designs, birth weight obtained from parents, and three subtests of the *Illinois Test of Psycholinguistic Abilities (ITPA)*: Auditory-Vocal Automatic, Auditory-Vocal Sequential, and Auditory-Vocal-Association. The *Schonell Word-Recognition Scale* was given at the end of the first year as a criterion of reading progress. The mean score on the Schonell was about 3 points higher than the norm for entering second grade. The average IQ was 107.96 which may account, in part, for the mean reading score. The range on the Schonell was from 2 to 40 points. Of the 131 pupils, 35 scored below second grade, and 18 were more than one standard deviation (SD) below the mean (half a school year). A standard score, z, was computed for each of the 17

variables, then the mean z for 96 good readers and 35 poor readers were compared. Differences of one SD on the Stanford-Binet mental age and the Hooper Visual-Organization tests were the largest. All tests but the Rorschach and the Vineland Scale, and the birth weights significantly distinguished between the 2 reading groups. Coefficients of correlation showed that the Stanford-Binet, Auditory-Vocal Automatic and Sequential of *ITPA*, and the visual-motor tests were most significantly related to reading achievement. Chi-square analysis showed that 14 of the 17 variables distinguished between the good and poor readers as defined here. The trend in all variables was for those with average or higher preschool scores to become good readers. Conversely, children with many low scores tended to become poor readers. The coefficient of correlation between the number of scores below one SD on the variables and the Schonell was −.46. The findings supported the conclusion that reading problems cannot be attributed a single variable, but rather, there was a high incidence of developmental deficiencies among poor readers.

Jansky and de Hirsch (153) dealt with the development of 2 instruments at kindergarten level, one for predictive screening and the other for diagnosis. The subjects came from 5 public schools in New York City. There were 217 boys and 184 girls, 42 per cent of whom were black and 5 per cent, Puerto Rican. Two subtests of the *WISC*, Similarities and Block Designs, were administered to a randomly selected subsample as an assessment of intelligence. The mean score on Similarities was 11.8; on Block Designs, 10.6. For the prediction instrument, preschool tests were administered in the spring of the kindergarten year. Reading and spelling achievement were assessed in the spring of the second grade. Scores on a total of 19 measures were collected in kindergarten. Of these, some were standardized and others were author-constructed. The measures included Pencil Use, Name Writing, *Bender Motor Gestalt Test*, *Minnesota Percepto Diagnostic Test*, Tapped Patterns, Sentence Memory from the Stanford-Binet, *Wepman Auditory Discrimination Test*, *Boston Speech Sound Discrimination Test*, *Roswell-Chall Auditory Blending Test*, Oral Language Level, Number of Words Used in Telling a Story, Category Names, Picture Naming, Letter Naming, *Horst Nonsense Word Matching Test*, Word Matching Subtest of the 1937 *Gates Readiness Test*, Matching by Config-

uration, Recognition of Words Previously Taught, and Spelling Two Words Previously Taught. In second grade, the following 12 assessments were taken: *Roswell-Chall Auditory Blending Test, Bryant Phonics Test, Gates Advanced Primary* or *Gates-MacGinitie Paragraph Reading Test, Gray Oral Reading Test*, Fluency of Oral Reading, Guessing at Words from Context, Written Spelling Test (Metropolitan), Oral Spelling Test (Stanford), Number of Letters Transposed, Number of Letters Reversed, Number of Words in Written Composition, Percentage of Correctly Spelled Words in Composition. Using stepwise multiple linear regression techniques, the authors determined the subset of variables that yielded the best predicting equation. The sample was also analyzed according to age, sex, race, intelligence, and socioeconomic status. It was found that 16 per cent of white girls, 23 per cent of white boys, 41 per cent of black girls, and 63 per cent of black boys had failed to learn to read by the end of second grade. Failure in reading was defined as a score of 2.2 or below on the silent reading comprehension test. In order of contribution to reading, the tests were Letter Naming, Picture Naming, Gates Word Matching, Bender Motor Gestalt, Binet Sentence Memory, and Word Recognition. Additional refinement led to the development of the Screening Index which consisted of all of the above with the exception of Word Recognition. The Screening Index identified 79 per cent or 84 of the failing readers. The multiple correlation coefficient of this battery with end of grade 2 silent reading achievement was .66, and 43 per cent of the variance in reading was accounted for by the Screening Index. The correlation matrix of the kindergarten and grade 2 test scores was used as the basis for the diagnostic battery. Factor analysis and multiple correlation and regression procedures were used to determine what factors underlie reading and their contribution to it. Five factors were identified: 1) Visuo-Motor Organization, 2) Oral Language A, 3) Pattern Matching, 4) Pattern Memory, and 5) Oral Language B. Factor 2 accounted for 14 per cent of the variance in reading achievement, and Factors 3 and 1, for 9 per cent and 8 per cent respectively. A diagnostic battery containing all factors except Oral Language B was organized. Instructions for administering and scoring the battery were given but further data on the development of the battery were not presented.

The *Sapir Developmental Scale C* was used by Sapir and Wilson (295) to identify kindergarten children with developmental lags in perceptual-motor, bodily schema, and/or language development.

The children were then followed to see if the Sapir test was predictive of end of first grade academic performance. The Sapir was given in January of the kindergarten school year. In the fall of the first grade year, the Marianne *Frostig Test of Visual Perception* and the *New York State Reading Readiness Test (NYRR)* were given. Children were also seen in first grade by a pediatric neurologist who rated them neurologically on a 1-10 scale, with 5 designated as borderline. In June of grade 1, the Word Meaning, Paragraph Meaning, Vocabulary, Spelling, Word Study, and Arithmetic subtests of the *Stanford Achievement Test*, Primary I, *(SAT)* were given. Of the 54 children, 18 revealed deficits in at least 2 of the 3 developmental areas and fell below the seventieth percentile on the Sapir. They were, therefore, judged to be developmentally deficient. When 16 of these 18 were examined by the pediatric neurologist (2 were ill at the time), 13 were diagnosed as having minimal brain dysfunction; none of the other children were so rated. Coefficients of correlation of .45 and .66 respectively were obtained between total scores on the Sapir test and total scores on the Frostig and *NYRR*. For the total *SAT* score, a coefficient of .64 was obtained with the Sapir, and subtest scores on the *SAT* correlated from .30 (Vocabulary) to .71 (Spelling) with the total Sapir score.

Levine and Fuller (194) compared the mean scores of 44 subjects deficient in reading with the norms on 38 psychoneurological, psychological, and educational test variables. The subjects were 44 children, ages 8 to 13, who had been referred to a summer school remedial reading clinic. Of the group, 8 were girls and 36 were boys. The sample was one or more years below grade level in reading, scored above an IQ of 87 on the *Wechsler Intelligence Scale for Children (WISC)*, total or either part score. Normal health was recorded in school records. In addition to the *WISC*, the *Wide Range Achievement Test*, Reading subtest, was used to determine level of reading deficit. The additional test battery included the *Minnesota Percepto-Diagnostic Test*, *Revised Visual Retention Test* (Bender), 6 subtests of the *Durrell Analysis of Reading Difficulty*, Halstead's neuropsychological battery, *Modified Halstead-Wepman Aphasia Screening Test*, and the *Harris Test of Lateral Dominance*. The Durrell Analysis was done the first week and others given later and then scored according to manual directions. The *t* test showed that the subjects performed significantly above norms on 10 variables and significantly below on 9. Patterns of differences were compared to those of previous studies for interpreta-

tion. On the Seashore test, all age level subjects were significantly better than normals but inferior on the Halstead Speech Perception test; this indicates adequate auditory development but inadequate integration of visual and auditory modalities. In the 9 and 10 year old groups, performance on the Halstead Category test was above average, so it was possible to abstract unique groupings of essential similarities from a stimulus figure. Likewise, the *WISC* subtest Picture Completion showed superior attention to details, suggesting that these pupils were analytic conceptualizers of visual stimuli. This suggestion was supported by performance on the Object Assembly and Block Design subtests, as well as the Benton and Minnesota tests. Moreover, at all age levels the reading deficit group performed less well when several modalities were combined.

Hunter and Johnson (147) sought to discover how non-readers differed from the adequate readers in respect to historical, familial, and developmental factors as well as in psychological test performance. The subjects were 20 boys recommended for a summer remedial reading clinic (RD), with an age range of 7-11 to 11-4 years. Also, 20 controls (C) were matched for sex, age, grade, race, intellectual level, and socioeconomic status. Tests given to each RD and C were the *Wechsler Intelligence Scale for Children (WISC)*, the *Wide Range Achievement Test* (Reading section), the *Bender Visual Motor Gestalt Test*, the *Draw-a-Man Test*, the *Wepman Auditory Discrimination Test*, and a test of "handedness." Birth and developmental history came from a parent questionnaire. Parents also completed a behavioral rating scale of 28 items. A neurological examination was used to screen out children with severe handicaps. Being matched for IQ, there were no significant differences between *WISC* performance or totals. However, RD's had higher Performance than Verbal IQ's. C's had significantly higher Verbal IQ's. Also, C's were superior to RD's on these *WISC* subtests: Information, Vocabulary, Digit Span, Arithmetic, Similarities, and Coding. The sum of Arithmetic and Digit Span subtests was called "tested attention." These scores significantly (.05) discriminated between RD's and C's and also correlated well with reading achievement (.67). The Bender-Gestalt (B-G), scored according to Koppitz, was sectioned into 2 groups: 3.0 or less, and 4.0 or more. There was a significant difference between scores for C's and RD's, with a larger number of poor B-G's in the RD group. Designs A, 3, and 5 of the B-G were most discriminating. No significant differences were found on the Wepman or the *Draw-a-Man Tests*. All RD's and all but one of

the C's wrote with their right hands. However, the laterality score discriminated significantly between RD's and C's; 17 of the 20 RD's tested left-handed while seven C's tested left-handed and one ambidextrous. Right-handedness correlated .48 with reading ability. Behavioral ratings showed RD's less self confident than C's, but no other differences were marked. A higher incidence of reading problems (22) among members of the immediate families of the RD's compared to C's (2) was recorded. Problems of birth, early development and illness were similar but RD's crawled significantly earlier (6.5 mo.) than C's (8.1 mo.). Also, RD's were approximately 6 months younger than C's when they entered first grade.

Guthrie, Goldberg, and Finucci (125) investigated reading, auditory reception and memory, visual reception and memory, language, and motor coordination among disabled readers. The mean age of the group was 10.15 years and the mean grade placement, 4.82. The mean Lorge-Thorndike Verbal IQ of 29 subjects was 95.81; mean on the *Gray Oral Reading Test* was grade 2.56; and on the reading subtests of the *Metropolitan Achievement Tests*, grade 3.12. Screening showed that none of the subjects had sensory impairments and all had normal intelligence; yet they were reading about 2 years behind grade. In addition to the aforementioned tests, the following were administered: *Detroit Test of Learning Aptitude (DTLA), Kennedy Institute Digit Span, Peabody Picture Vocabulary Test, Benton Visual Retention Test, Wepman Auditory Discrimination Test*, and the *Illinois Test of Psycholinguistic Abilities (ITPA)*: Visual Sequential Memory and Expressive Language. The subjects appeared to test adequately in all areas except the following, on which they were 1.5 years or more behind expected: *ITPA* Visual Memory, *DTLA* Attention Span for Unrelated Words, Kennedy Digit test, and the *ITPA* Expressive Language test. Raw scores on 17 tests were intercorrelated and factor analyzed. The first 4 factors accounted for a significant portion of the variance, but no others added to them. Factor I accounted for 19 per cent of the variance and was called "reading ability" since all of the reading tests loaded on it. The *DTLA* Memory for Objects, and the *DTLA* Visual Attention Span for Letters also composed Factor I. Factor II accounted for 15 per cent of the variance and was called "auditory memory." It included the *DTLA* memory for words and syllables and the Kennedy test. Factor III accounted for 13 per cent of the variance and was described as "oral vocabulary," not including complex language processing. Tests loading high on this factor were the

DTLA Verbal Opposites and the Peabody test but not the *ITPA* Expressive Language test. Factor IV was called "visual memory" and accounted for 11 per cent of the variance. It was defined by the *Benton Visual Retention Test* and the *ITPA* Visual Sequential Memory test. The reading levels of this sample of disabled readers were relatively independent of the other 3 factors.

Black (25) explored differences between children whose reading disorders were associated with neurological dysfunction as well as those not so associated. The subjects were 25 reading disabled children with normal intelligence who showed positive findings on at least 2 of 3 indices of neurological dysfunction: birth and developmental history, pediatric neurological examination, and electro-encephalogram. The comparative sample of 25 Psychology Service referrals were similar to the experimental subjects but showed negative findings on the 3 neurological dysfunction indices. Both groups of subjects were given the *Wechsler Intelligence Scale for Children (WISC)*, the *Wide Range Achievement Test (WRAT)*, and the *Frostig Developmental Test of Visual Perception*. The 2 samples did not differ significantly on any of the foregoing tests except the Perceptual Quotient of the Frostig test (.001) on which the neurologically impaired scored lower. A second analysis was made of the neurologically impaired sample. Nine subjects showed right-sided impairment, 9 showed left-sided impairment, and 7 were considered bilateral. Differences between the right and left were *WISC* Verbal Scale IQ, Performance IQ, Frostig, and the *WRAT*: Spelling and *WRAT*: Reading. Subjects with right-sided impairment scored higher on the *WISC* Verbal Scale, while those with left-sided impairment scored higher on the Performance and Full Scales, as well as the Frostig quotient. Left-sided impairment subjects scored significantly below right-sided subjects in both reading and spelling, but no differences were found in arithmetic.

Katz and Wicklund (171) compared the abilities of good and poor readers at 2 grade levels to visually scan a row of letters to locate predetermined ones; this was done to study response selection ability. The targets were 10 lowercase letters. The first of 2 slides for each trial contained the key letter, and the second contained either one, 2, or 4 target letters. In response to the first slide, the subject said the letter. In response to the second slide, he pressed a "yes" or a "no" button if he found the key letter on the slide. Five sets contained one, and 5 contained 2 and 4 letters. Within each set of 12 actual trials, 2 slides were positive (contained the key let-

ter), and 2 were negative. Each slide was exposed for 3 seconds. The score was the number of errors made. The subjects were tentatively divided into good and poor readers by scores on the Ginn test for grade 2 and the Iowa test for grade 6. The final classification was made on the Reading subtest of the *Wide Range Achievement Test* given to each subject after the experimental session. Fifteen good and 15 poor readers were selected at grade 6, and 12 of each at grade 2. The mean error rates for all groups of subjects on the 36 trials was less than 5%. For each subject, an average latency was computed for each type of response (yes-no), scan length (1, 2, or 4), and block (1, 2, or 3). Analysis of variance showed main effects for grade, response type, and scan length. Second graders were slower than sixth graders, negative responses slower than positive, and latency increased with scan length. Neither reader ability (good or poor) nor any of its interactions was significant. Since practice effect decreased latencies, block 3 alone was analyzed; but again, no reader effects were found. Of interest was the finding that scan rate was faster than inner or covert speech and faster than the preferred rate for compressed speech of adults. While no differences were found in scan rate of good and poor readers, comparisons with other studies suggest that memory retrieval may account for previous differences and should be studied.

Pikulski (261) compared the concurrent validity of the Goodenough *Draw-a-Man Test*, and the Goodenough-Harris scoring of it with the *Wechsler Intelligence Scale for Children (WISC)*. The 50 boys, ages 7-6 to 11-8 years, were classified as reading disability cases with reading achievement 2 years below expectancy, according to the *WISC*. Reading level was determined by an informal word recognition test and an informal reading inventory. Comprehension problems were eliminated from the study so that all had difficulty in word recognition. The range on the *WISC* was 80 to 129 IQ with a mean of about 104. No physical nor vision defects were noted. All tests were given within a 2-day period. A coefficient of correlation of .87 was found between the 2 systems for scoring the drawings. Moreover, the Harris system is more complex. The *WISC* verbal scale correlated only .04 with the Harris system IQ and .20 with the Goodenough IQ. The Performance Scale correlated .48 and .52 respectively with the 2 scorings, and the Full Scale coefficients were .32 and .44. Subtests of the *WISC* Verbal Scale correlated with the Figure Drawing IQ's as low as .00 and only as high as .32. The Performance Scale subtests were related to the drawings moder-

atel with coefficients ranging from .09 to .51. Wide discrepancies were found between the Verbal and Performance IQ's among these children, with the Verbal score higher in some instances and lower in others. Generally, the Figure Drawing IQ's were lower than the *WISC* and possible explanations were suggested for further study.

Guthrie and Goldberg (124) investigated the relationship of visual sequential memory to reading among disabled readers in comparison to normal readers. The disabled readers were from a summer remedial program and had a mean chronological age of 10.27 years. The normal readers were from public and laboratory schools, had a mean chronological age of 8.55 years, but matched the disabled group in both IQ and reading level. The IQ was determined by the *Wechsler Intelligence Scale for Children (WISC)* while reading level was determined by the *Gray Oral Reading Test*, the *Metropolitan Achievement Test* (Reading) for the disabled and the *Wide Range Achievement Test (WRAT)* which was given to a sample of 48 in the normal reading group. The disabled group had IQ's of 80 or higher and reading ages of 2 or more years below chronological age. Tests of visual memory given to both groups were the *Benton Visual Retention Test* and the Visual Sequential Memory subtest of the *Illinois Test of Psycholinguistic Abilities (ITPA)*. These 2 tests differ in that subjects must identify the correct series of forms among foils in the Benton but must construct the sequence of forms in the *ITPA*. In addition, the *Knox Cube Test* was given to the normal group. Separate coefficients of correlation were calculated for each group. Scores on the Gray Oral for normals correlated as follows: *ITPA* Memory, .47; Benton, .51; and Knox Cube, .34. For disabled readers, the respective coefficients were: .15, .32, and none for the Knox. Partial correlation, with chronological age held constant for normals, were Benton and the Gray, .28; *ITPA* memory and the Gray, .35; Benton and the *WRAT*, .47; and Knox Cube and the *WRAT*, .23. The only significant relationship among disabled readers was .47 between the Benton and the Reading subtest of the Metropolitan. Intercorrelations among the visual memory tests for 81 normals ranged from .38 to .49, showing an interrelation — even though the tests were not related to reading with equal strength. The finding that the Benton was related to oral reading as well as to silent reading showed that it may measure a generalized sequential ability important to learning to read.

Vande Voort and Senf (344) sought both visual and auditory abilities which might account for the auditory-visual integration def-

icits often found among retarded readers. The following matching tasks were designed: 1) visual-spatial / visual-spatial (Vs-Vs); 2) visual-temporal / visual-temporal (Vt-Vt); 3) auditory-temporal / auditory-temporal (At-At); and 4) auditory-temporal / visual-spatial (At-Vs). If the major problem was integration, low scores on the fourth task were anticipated. The auditory-temporal signals were produced by transferring stimuli produced by an audio-oscillator to a tape recorder. The duration of each tone was a half-second, with a half-second interval between stimuli and a one second interval between groups of stimuli. Visual-spatial stimuli were produced by typing periods (dots) in different patterns on 5x8 inch cards. There were 2 spaces between dots and 4 spaces between groups of dots. Visual-temporal stimuli were presented on Language Master Cards with a special shield so that the stimuli passed the subject left-to-right with the same durations and intervals as the auditory stimuli. Using appropriate combinations of the above stimuli, the 4 "same-different" matching tasks were produced. The subjects were 16 boys attending a Learning Problems Center with *Wechsler Intelligence Scale for Children* IQ's between 85 and 115; with *Bender Gestalt Test* scores within one and a half standard deviations from the mean; with no known gross neurological, sensory, or emotional problems; and with reading quotients of 83 or less. The mean chronological age was 111.9 months, IQ was 98.9, and reading quotient, .70. An equal number of male controls were matched for age and IQ; they had a mean reading quotient of .98. All tasks were presented individually in random sequence following instructions and practice. Intervals between tasks varied from 3 to 11 seconds. The results showed that retarded readers made significantly (.05) more errors than controls on the Vs-Vs task, and (.01) on the At-At task. On the At-Vs task the difference was not significant, nor did the Vt-Vt task discriminate between the 2 groups. Correlations among tasks were calculated for each group. The only significant one (-.48) among retarded readers was between Vs-Vs and At-At. In the control group, the only significant correlation (.57) was between Vt-Vt and At-At. In both groups, Bender deviation scores correlated .62 with the V-Vs errors. Among the retarded readers, the only significant correlation (-.47) involving reading was the Vs-Vs errors and the reading quotient. The At-Vs task did not discriminate between groups, suggesting unimodal deficits rather than intermodal integration as the major problem among retarded readers.

Cashdan (52) viewed the ability of good and poor readers to integrate auditory and visual stimuli. The average reading age for the 22 retarded readers was 6.5 years; the good readers, matched for age, sex, socioeconomic group, and non-verbal intelligence, had a mean reading age of 10.0 years. Each group was randomly subdivided into 2 groups and given either an instructed or an uninstructed version of a 20-item auditory-visual test consisting of a series of taps followed by a visual pattern of dots. In the instructed version of the test, the examiner gave a verbal explanation of the taps made with each example, indicating the number and position of taps and pauses. The researcher hoped to see if the verbal labelling would aid the performance of the retarded readers. As a second task, each child was given 20 additional items in which he was to verbally explain the pattern that he had heard. Both groups of good readers scored better than the retarded readers. The instructed group of retarded readers scored better than did the uninstructed group, but differences were found between the 2 groups of good readers.

Klees and Lebrun (179) adopted Piaget's analysis of the developmental stages of children's thought, then selected tests of figurative and operative aspects to study a sample of 40 dyslexic children, ages 7 to 11, with IQ's higher than 90 and attending a special school for dyslexics in Brussels. Tests exploring the figurative aspects of intelligence were the Assemblies, Coding, and Kohs blocks from the Performance Scale of the *Wechsler Intelligence Scale for Children*; the tests of Bender-Santucci; and the complex figure of Rey-Osterrieth. In addition, the Coins Test of Greco was included to study the evolution of the construction of a group of objects in relation to an equivalent given group of objects. Tests exploring the operative aspect of intelligence were the test of liquid conservation by Piaget and Inhelder, and the stick-ordering test, both by Piaget and Inhelder. Also, the test of horizontality required the child to draw lines on a picture of a jar to show how it would look in different positions. The last of the operative tests was the classification test by Piaget and Inhelder. The results showed that 80 per cent of the dyslexics presented disturbances in the figurative aspects of thought, particularly among older subjects. Particular deficits were shown on the Rey-Osterrieth complex figure, on which the mean was at the thirtieth percentile. On the Bender-Santucci test, 70 per cent of the 9 and 10 year olds ranked in the lower quartile. A qualitative difference was also noted especially in that children who obtain adequate answers on the Coins test did so by term-

to-term correspondence. Moreover, there was general retardation in the acquisition of operative mechanisms. The dyslexic children were retarded about a year on the notion of conservation. On the test of horizontality, dyslexic children recognized that the water changed positions but had difficulty identifying a system of external reference. Also, the dyslexics were about a year behind normals in the stick-ordering test. On the test of flower classification, visual control was necessary; for they could not successfully handle the verbal aspects of the problem. Finally, the authors found that all subjects who were very disturbed on figurative items also exhibited an operative delay.

Ball and Deich (13), using the Postman and Bruner theory of premature perceptual hypotheses, investigated the number of responses given, by disabled readers and controls, to sentences of 3 words. They hypothesized that disabled readers would offer fewer one- or 2-word responses and more 3-word responses, even with errors, than controls because they had become habituated to reduce, prematurely, the uncertainty of the perceptual situation by guessing. The subjects were 20 pupils in grades 5 and 6 who were reading about 2 years below grade, and 20 controls from a grade 3 class. The mean reading grade score for the disabled on the Reading subtest of the *Wide Range Achievement Test* was 4.0, while the mean for controls was 3.9. On the *California Test of Mental Maturity*, mean IQ for disabled was 91.2 compared to 100.4 for controls. Chronological age differences were greater as expected: disabled, 10.8, and controls, 8.6 years. Three 3-word sentences composed of words no more difficult than those introduced at grade 2 were exposed tachistoscopically at 1/100, 1/50, 1/10, 1/5, 1/2, and 1 seconds. Three trials were given at each speed until each subject successfully read all 3 words aloud. Meanwhile, a verbatim record was made of each child's responses on each trial to successful performance. A 3-word hypothesis was defined as a correct or incorrect perception of 3 or more words, a 2-word hypothesis as 2 words, and a one-word hypothesis as perception of one word or the identification of one or 2 letters in a word. Analysis of variance of groups x hypotheses on a repeated measures design showed no overall group differences or interactions, but there were differences among hypotheses (.001). *T* scores showed that the disabled readers equaled the normals in exposures to criterion. Finally, when errors in reading individual words were analyzed in terms of guessing, perseveration, or omission, the disabled group had a significantly (.01) higher number of

omission errors than normals showing no tendency for disabled readers to form premature hypotheses.

Ingram, Mason, and Blackburn (150) reported findings of an investigation of 82 dyslexic patients in an effort to gain insight into the relationship between specific reading disability and underlying brain function. The 66 boys and 16 girls in the group showed mild, moderate, or severe reading and spelling underachievement as assessed by the Schonell tests (RI and SI) and the *Stanford-Binet Intelligence Scale*, 1960 revision. Mild underachievement was defined as an attainment quotient on the Schonell of 10 to 14 points below IQ; moderate underachievement, as 15 to 29 points below IQ; and severe underachievement, as a disparity of 30 or more points in the 2 scores. All but 6 children were of average or higher intelligence, but they were reading at an average of more than 2 years below CA. A detailed history was taken on each subject, including a physical and neurological examination. The Goodenough *Draw-a-Man Test* was given to 49 of the subjects who were under age 10, and the Schonell R 5, 6, and 7 diagnostic tests were given as appropriate. Children were placed in one of 2 categories. The first, specifics, consisted of 62 children who were underachieving in reading and spelling only and thereby fulfilled the operational definition of specific dyslexia. The second group, generals, of 20 had general learning difficulties. Audio-phonic difficulties and visuo-spatial difficulties were assessed in the 2 groups. Audio-phonic difficulties were defined as inability to synthesize letters correctly sounded singly into correct words, confusion of vowel sounds, poor phonic knowledge, and inability to analyze words into their natural auditory units. Visuo-spatal difficulties were defined as confusion of letters of same shape but different orientation, slow word recognition of even simple words, poor visual discrimination, and reversal or directional errors. The 2 groups were found to be similar in age, social class, and intelligence. In the specifics, 40 per cent had a history of reading difficulties in their families; 25 per cent of the generals showed a family history with other members exhibiting reading problems. The specific group showed less evidence of brain damage or dysfunction than the generals, whether assessed by birth or developmental history, clinical examination, or EEG. Only 11 per cent of the generals made errors of audio-phonic origin in reading, while 77 per cent of the specifics did. Both groups had high percentages of word discrimination and recognition of difficulties. The degree of underachievement (mild, moderate, severe) was similar in both groups.

Teachers' ratings of abnormal motor behavior in children with severe reading difficulties were subjected to factor analysis by Spring and Greenberg (317). Coefficients of correlation between the factor sores and scores on a reaction-time test were then computed. Subjects came from learning-disability classes in public elementary schools and had *WISC* full-scale IQ's ranging from 94 to 130. The Reaction-Time Test (RT) consisted of 6 blocks of 20 trials each in which subjects were to react to whether 2 pairs of projected letters were the same or different. Nine months after the Reaction-Time Test was administered, teachers rated children on the Motor-Behavior Inventory, a test containing 15 items including such things as "Talks rapidly," "Hard to slow down," "Often twists and turns in his seat," and "Clumsy in handling small objects." A factor analysis of teacher ratings resulted in 3 main factors: Factor I was an Activity-Level Factor; Factor II was an Attention-Span Factor; and Factor III was interpreted as a Motor-Coordination Factor. A second reaction-time test was given which was called Reminiscence and which utilized the difference between mean reaction times immediately before and after a test. The RT score correlated .55 with Factor III, .06 with Factor I, and .01 with Factor II. Reminiscence scores correlated .41 with Factor II, .20 with Factor I, and .33 with Factor III. Only the first of these 3 coefficients reached statistical significance (.05 level).

In a case study analysis, the characteristics of retarded readers making good progress under remedial instruction were compared by Lytton (207) with those of pupils who were not progressing in similar situations. Two groups, good (G) and poor (P), were matched for sex, mean chronological age, and mean non-verbal IQ with 8 boys and 4 girls in each group. The critera for good achievement were a reading level, after remedial instruction, close to age norm on the *Burt-Vernon Word Recognition Test*, and an assessment — by the child's teacher and the researcher — of average reading. For poor achievement, the criteria were a rating of poor by the teacher and a stay of an exceptionally long period in remedial instruction. Separate analyses were made for boys and girls, but only the data collected on the boys were reported. Information collected included the *WISC*, Rorschach, drawing a person, a story about the drawings, a measure of drive assessment, the Junior Maudsley Personality Inventory, adjustment indicators, an anxiety rating, and home environment and history. In addition to the Burt-Vernon test, the Schonell was given between one and 2 years after discharge

from the remedial group. The reading of the poor achievers was described as slow, halting, and stumbling, while subjects in the G group were described as reading with fair fluency. On the *WISC*, the mean score and the range of the 2 groups were quite similar. However, the G group scored better than the P group on the verbal section, while the reverse situation held true for the performance IQ. The 2 groups did not differ significantly on father's occupation, family size, living space, or condition of the home. Cultural characteristics of the 2 groups were similar. G achievers read comics and books at home, while the P group read no books at home but watched more television than did the G group. On various personality assessments, the P group showed a higher degree of maladjustment than did the G group. Responses of the G group on the Rorschach were described as disciplined, more integrated, and form-bound. The tone of the stories about their drawings was positive and wholesome. The P achievers showed more disturbances on the Rorschach. Their drawings and stories showed much less self confidence. Other symptoms more characteristic of the P group included delayed speech development in infancy, a large number of serious illnesses, and reading difficulties prevalent in other family members. The author suggests that a combination of factors differentiates the 2 groups.

IV-14 Personality, self concept, and reading

Williams (359) investigated the relationship of self concept (SC) to reading achievement at the first grade level. Subjects were drawn from 3 classrooms in one public school. The socioeconomic level ranged from upper-middle to lower-lower. Boys and girls were about equally distributed between the samples of 2 successive years. About 75 per cent were Anglo, and 25 per cent Hispano. Mean IQ on the *Kuhlmann-Anderson Test* for group A was 109.35; for group B, 103.95; and for a matched control group, 109.26. Reading readiness scores on the *Metropolitan Readiness Test* were, respectively: 68.74, 61.50, and 67.41. Reading achievement was measured at the end of both first and second grades with the *California Achievement Test*. To assess SC at the beginning of the second half of first grade, an adaptation of the *Coopersmith Self-Esteem Inventory* was used. The modification, read to pupils, had coefficients of stability of .63, .63, and .67 in pilot studies. Analyses of variance showed that groups A and C did not differ significantly. The Anglos consistently scored higher than the Hispanos on IQ and reading achievement. No sources of variance could be attributed to SC. Besides, SC

did not correlate significantly with any of the other measures. Results of a step-wise multiple regression showed that IQ and reading readiness accounted for 43 per cent of the variance in reading achievement at first grade and 40 per cent at second grade and SC added nothing to predictability. Ethnic background contributed insignificantly because of its correlation with IQ and reading readiness.

Messmore (224) researched the relationship between third graders' degree of identification with story characters and their comprehension of materials. Subjects were whites and blacks from innercity Title I schools in 4 cities. Two types of comprehension were assessed, specific and molar. Molar, or general comprehension, was assessed by use of the *Gates-MacGinitie Reading Test*, administered in different forms as a pretest in the fall and as a post test in February. Specific comprehension was based on an author-constructed test. The *Modified Semantic Differential for Elementary Children* as given along with the specific comprehension tests at each of 3 monthly visits to the classrooms. The Semantic Differential was used to determine the degree of inferred story-character identification. In addition, the *Lorge-Thorndike Intelligence Test*, Level 2, Primary Non-Verbal Battery, was administered in the fall. A 3-way factorial analysis of covariance with race, sex, and identification level (high, moderate, or low) as factors was used to analyze the data. Children of both races who identified at high and moderate levels had significantly higher molar reading comprehension scores than did low-identifying children. However, for specific reading comprehension, many of the analyses showed no significant differences related to identification level.

Stevens (323) studied the patterns of acceptance among children identified as remedial readers and their peers. The 25 boys and 9 girls involved in small remedial group instruction were reported as having IQ's of 90 or above and as reading at least one year below their expected reading level (no tests named). The *Ruth Cunningham Classroom Social Distance Scale* was administered at mid-year to both remedial children and 852 pupils in regular fourth grade reading classes. No data are given, but the author reports that significant differences (no level noted) were found between the ratings given remedial readers and their peers, with the remedial group not as socially accepted. No differences were found between the self-ratings of the remedial group and their peers' ratings of them. No sex differences were found among remedial readers on either self

ratings or peer ratings of them. Remedial readers and their peers rated the peer group in a similar manner.

Johns (159) explored the relationship between pupils' concepts of reading and their achievement at fourth grade. Each pupil was asked "What is reading?" The tape recorded responses were classified into 5 categories: 1) Don't know and vague descriptions, 2) classroom procedures, 3) word recognition (saying words), 4) meaning or understanding, and 5) meaning and word recognition. The Vocabulary and Comprehension subtests of the *Gates-MacGinitie Reading Tests* were correlated with the category ratings of concepts of reading. Vocabulary correlated .31, and Comprehension, .33 — both significant but low.

Bazemore and Gwaltney (18) sought measures of personality capable of discriminating between disabled and non-disabled readers. The subjects were 8 to 12 years of age, enrolled in summer school, having completed the third through sixth grade. All pupils were given the *California Short-Form Test of Mental Maturity*, the *California Reading Achievement Test*, and the *Children's Personality Questionnaire (CPQ)*. Wilson's criteria for degree of tolerable differences were used to separate the 2 groups into 30 disabled and 38 non-disabled readers. The *CPQ* is composed of 14 factors, defined by high and low extremes. The *CPQ* was scored in units of "stens" with values from one to 10. The differences in means for the 2 groups were subjected to the *t* test. Two differences were significant (.05): Expedient-Conscientious, and Tough-minded — Tender-minded. Described in further terms, the non-disabled readers were more conscientious, staid, and rule-bound than the disabled readers. Moreover, the non-disabled readers were more tender-minded, dependent, and sensitive than disabled readers.

Jensen (155) examined the relationships of the *Junior Eysenck Personality Inventory (JEPI)* to mental ability, achievement in school subjects and socioeconomic status (SES) in a diverse ethnic and cultural group. The subjects were white, black, and Mexican /American pupils in grades 4 through 8. The predictor tests were given in the fall and the achievement tests in the spring. Standardized intelligence tests included the *Lorge-Thorndike Verbal and Non Verbal IQ, Raven Progressive Matrices or Standard Progressive Matrices*, and a non-verbal reasoning test. The SES was determined by the Home Index, a 24-item questionnaire. The *JEPI* yielded scores on Extraversion (E), Neuroticism (N) and the Lie (L) scale. Scholastic achievement was determined by the *Stanford*

Achievement Test. Comparisons of the mean scores on the 3 aspects of *JEPI* showed several differences. Also, some differences, particularly in N, were found between the ethnics groups in the present sample. Coefficients of correlation among E, N, L, and other variables showed that all were very low and few were significantly different from zero. Most of the principal component analyses showed that E loaded about .20 and shared some common variance with other variables across all ethnic groups. However, N shared very little variance, while L showed significant negative correlations with achievement. Partial correlations of E, N, and L with achievement, when the effects of IQ and SES were held constant, showed no consistent pattern over grades or ethnic groups. Only a few negative coefficients ranging from -.16 to -.33 were found with reading achievement. The highest of the range was between L and Reading Comprehension among white pupils at grade 4.

Farmer and Garfield (92) investigated the intensity and appropriateness of emotional expression and what emotions meant to lower-class subjects, both retarded and not retarded in reading. In a residential treatment center for emotionally disturbed boys, the 27 subjects in the experimental group averaged 5 and a half years below age in reading, while the 29 members of the control group averaged one half year below age level. The groups were matched by age, social class, *Wechsler Intelligence Test for Children (WISC)*, IQ, length of institutionalization, referral problem, and diagnosis. Their mean chronological age was about 14 years. Four instruments were individually administered: 1) 6 designs of the *Bender-Gestalt Test* (boys with an error score of 2 or more were included); 2) stories told in response to 6 pictures of the *Michigan Picture Test* followed by a structured inquiry scored for intensity of emotion; 3) the Tantalizer Puzzle, a frustration task for which 7 minutes were allowed for each subject; and 4) a semantic differential questionnaire, including happiness, sadness, anger, fear, anxiety, and love. In addition, a behavioral questionnaire was filled in by a mental health professional in the institution. The mean scores, except for the behavioral questionnaire, were compared by use of the *t* test. Only one of the mean differences (Fear on the Michigan Test) was statistically significant (.05), and it was probably a chance finding. On the 90 items of the bipolar semantic differential scales, only 6 statistically significant mean differences were found. Again, this number could easily be due to chance differences. No statistical analysis of the behavioral questionnaire could be made, but inspection showed only

one item which appeared different in the 2 groups. The experimental subjects talked less to their professional workers about school work than did the control group. The conclusion was reached that no relationships were found between the measures of emotions and reading retardation. However, an additional check on the composition of the 2 groups was made by comparing the raw scores of the best 10 readers in the control group with the poorest 10, and also with the poorest 10 in the experimental group. These 3 subgroups were so similar in mean scores on all variables that the earlier conclusion was further confirmed.

IV-15 Socio-cultural factors and reading

Bailey (12) sought to differentiate the effects of cultural deprivation and achievement related to the cognitive skill of auditory comprehension. The subjects were selected from 300 eighth graders who took the *Wide Range Achievement Test* (*WRAT*). Those subjects whose average scores were within 6 months of their respective expected grade levels were considered achievers. Then the students were categorized into deprived and nondeprived groups according to the McGuire-White adaptation of the Warner Socio-Economic Index. A composite score of 52 or higher was considered deprived. From these groupings came 4 categories: the deprived-achiever (DA), the deprived-nonachiever (DNA), the nondeprived-achiever (NDA), and the nondeprived-nonachiever (NDNA). A random selection from these unequal cells resulted in 20 subjects in each of the 4 groups. The auditory materials were obtained by recording subjects' oral responses to 6 stimulus cards of level 3 of the Peabody Language Development Kit. With external editing, a 500-word passage was obtained and tape recorded by a male narrator. Each passage was sectioned into shorter passages of 40 to 60 words each. Representatives of each of the 4 groups were exposed to auditory materials produced by each group. Immediately after listening to the selection, an auditory cloze test, with every fifth-word lexical deletion, was administered. Subjects' answers were recorded by the examiner and exact-word responses were counted correct. Analysis of variance showed 2 significant main effects: achievement, and auditory input materials. No interactions were significant. All achievers scored higher means on the auditory cloze test than did groups of nonachievers. The levels of difficulty of input materials in descending order, were from DNA, DA, NDA, and NDNA. Since deprived pupils appear to do as well as nondeprived in auditory comprehen-

sion, this avenue may be used educationally.

Levy (195) investigated vocabulary, mean length of *T* units, and 3 structures within *T* units of innercity black pupils. The subjects were 20 monolingual children selected at random from first grade classrooms where the socioeconomic levels were low. The stimuli were picture books illustrating various residential settings, schools, and both children and adults of various racial and ethnic groups, as well as animals. Children were invited to select one or more and to tell the examiner stories which were tape recorded for 30 minutes. Each word was coded as noun, verb, auxiliary verb, adverb, adjective, or function word, depending on its function in a particular structure. *Webster's Third International Dictionary* was used for the classification source. Hunt's *T* unit was adapted to black dialect and used to assess language development. The 3 *T* unit structures analyzed were: adjective + noun, genitive + noun, and adverbial phrase. There was a vocabulary range from 631 to 3,956 total words and from 187 to 533 different words produced. Nouns were the most frequently used, while auxiliary verbs and function words were fewest in number. In the total of 3,449 *T* units used, the average was 7.03 words per unit. More than 6 words per sentence were used in about half of the sentences, with a range of 5.9 to 9.5. The means and ranges were comparable to those of white middle-class children in an earlier study. All children used the 3 *T* units analyzed, with the adverbial phrase used most frequently. From the findings, the investigator concluded that disadvantaged innercity black children had adequate language skills to learn to read; the kinds of materials were not specified, however.

Hockman (143) investigated the effects of specific dialectal changes in an upper primary reading comprehension test. The *California Reading Test* (Upper Primary) was revised 2 ways: stories that had been written in black dialect were rewritten in "standard English" and vice versa. Seven major changes were used in creating black dialect: 1) third person singular verbs, 2) presence of copula, 3) place of auxiliary verb in *wh* questions, 4) possessives, 5) double negatives, 6) verb agreements, and 7) preposition drops. The subjects were 128 black and 138 white pupils in grades 3, 4, and 5. They were assigned randomly to one of the revised test forms. Teachers indicated race and reading level (high, middle, low). The results showed no significant differences in test scores on black dialect items for either blacks or whites in any grade or for the total group. Item analysis showed that only the last 8 items had a diffi-

culty level of .624 and correlated .402 with the total score. Other items did not discriminate well.

Nolen (245) also examined the effects of dialect on the recall of standardized reading passages rewritten in black dialect — as well as a non-standardized passage — with black and white pupils. The second and fourth grade passages from *Spache's Diagnostic Reading Scales* were rewritten in an approximation of black speech patterns. At each of second and fourth grade levels there were 3 reading selections and sets of recall questions: a non-standardized passage in Negro dialect (NSND), a standardized passage in Negro dialect (SND) and a passage in standard English (SSE). The subjects were from a ghetto area parochial school. They were asked to read the selections and write answers to questions in single words or short phrases. The recall scores for the 3 reading selections were classified by grade, race, and dialect. The factorial, repeated measures analysis showed no interaction between race and reading passage, nor between grade and race. A significant 3 way interaction (.01) among grade, race, and reading passage resulted. At second grade, reading scores of the 2 races were quite similar, but some differences appeared at fourth grade. However, even at second grade there was a difference between the 2 black dialect passages, showing that content and vocabulary were more important than dialect. At fourth grade, whites recalled significantly more than blacks on the black dialect passages, as well as on SSE, and in overall reading performance. The conclusion was reached that comprehension among these subjects was not affected differentially by printed patterns of oral language.

Emans (86) studied the effects of verb simplification as a means of making printed materials easier for "culturally different" children to read. He chose 6 paragraphs of about 180 words each, from 2 equivalent forms of a test, and he simplified the verbs of one form. Two paragraphs were for understanding details, 2 for main ideas, and 2 for recognition of sequence. A fifth-word cloze deletion was prepared, and only exact words were scored correct. The precloze procedure was used. Subjects were 2 intact classes considered to be "typical" in an "impoverished" school with mainly black students and 2 "typical" classes in a suburban school system containing chiefly white students. Half of the subjects read the simplified and half the regular verb paragraph first. Subjects were given all of the time they needed to complete the exercises. Preliminary analysis showed that the materials were too difficult for the students

in the black school, so a second black school, less "impoverished," was chosen and the procedure repeated. Data from all 3 schools were analyzed. In the first black school, mean differences between the cloze scores on simplified verbs (29.06 per cent) were significantly (.0005) higher than on the regular verb passage (24.81). In black school II, the simplified mean was 35.48 compared to the regular passage mean of 31.65, significant at the .005 level. Mean differences were small but significant (.02) in the white sample. The strength of the statistical association was estimated (Hays) and showed that verb simplification accounted for 11.76 per cent, 9.22 per cent, and 3.58 per cent of the variance in black school I, black school II, and the white school respectively. The conclusion was reached that verb simplification is a profitable technique for writing materials to increase comprehension of black students who are culturally different.

Evans and Reilly (90) sought to determine if the Reading Comprehension section of the *Law School Admission Test (LSAT)* is more speeded for candidates from predominantly black colleges than for a more typical population and to ascertain the effects of reducing the amount of speededness. *LSAT* tests have been given fee-free on some 50 campuses in the United States. At the time of one regular examination, the students were divided into 2 groups: 230 speeded (FFS), and 235 unspeeded (FFU). The 2 test forms were arranged alternately so that students received different forms in the order in which they reported to the test center. In the regular test centers, the 2 experimental test forms were used along with 2 existing *LSAT* forms, so that every fourth student took the unspeeded test. Regular center sample of speeded test (RCS) included about 1,250 students as did the regular center unspeeded test (RCU). To create the experimental test, the 4-passage Reading Comprehension section with 35 test items was reduced to 3 passages with 27 items; the amount of time allowed, 40 minutes, remained constant. Thus 27 items were common to both forms and were used for comparisons. To determine the speededness of the regular *LSAT*, Swineford's criteria were used: that is, a test is unspeeded if virtually all subjects reach 75 per cent of the items and at least 80 per cent respond to the last item. The regular *LSAT* version was clearly speeded for the fee-free students because less than 85 per cent reached item 19 and only about 60 per cent attempted the last item. However, more than 90 per cent attempted the last item on the 27-item test. In contrast, more than 90 per cent of the RCS

and 93 per cent of the RCU groups attempted the last item. Thus the conclusion was reached that the Reading Comprehension section of the *LSAT* was considered a speeded test for fee-free students and unspeeded for regular center candidates, and that eliminating 8 of the 35 items removed much of the speed component. The mean scores, both speeded and unspeeded, of the fee-free groups were considerably below those for the regular groups. An analysis of variance for the 27 items common to both test versions showed significant effects for centers (already known), for test form (since all do better on the unspeeded test), but no significant interaction between center and test form. Thus, reducing the numbers of items for a given time period did not give a greater benefit to fee-free students than to the regular center students. According to Darlington's "fairness" of the test, correlations between score and ethnic background show only a small difference favoring the unspeeded test. The KR-20 reliabilities of the regular center tests, speeded and unspeeded, were .71 and .72. For the fee-free candidates, the unspeeded reliability was .73, significantly (.05) larger than the speeded reliability, .59.

IV-16 Home and family characteristics

Only one study was found in the area of home and family characteristics, but the instrument developed may be of value to researchers. Guinagh and Jester (122) questioned whether a mother reads to her child or not. Therefore, they developed a Parent as Reader Scale (PARS) which was simple, economical, and easy to administer. It included 10 rating scales: 1) introduction of the book, 2) specificity of the language in talking to the child, 3) attempt to get verbal responses from the child to the book, 4) reading of the words, 5) elaboration on pictures, 6) use of sounds in book, 7) feedback from parent to child, 8) amount of pointing to objects in pictures, 9) emotional climate, and 10) parent's sense of humor. Each of the 10 scales was rated from one to 5, and each of these ratings had an accompanying description. The data for the study using the PARS were collected from 2 Parent Child Centers (PCC), one in a large urban area and the other in a small Appalachian city. There were 33 black mother-child dyads, and 17 were white. The average age of the children was 2-11. No children under the age of 19 months were included. The procedure included administration of the *Bayley Scales of Infant Development (BSID)* or the *Peabody Picture Vocabulary Test (PPVT)*. Then the mother was given the picture book.

What Do I Hear?, and asked, "Please show the book to your child." No time limits were imposed. There was great variability in the behavior of the dyads. At one extreme, the mother turned the pages of the book, showing each and saying "See, see!" At the other extreme, the mother and child talked at great length about the book and the pictures. Some mothers even related some pictures to the child's own experiences. Interaction between the dyads was greater in several instances. The average score on the 10 scales was 28.7 of a possible 50, with a standard deviation of 8.0. Examining the scale in parts, the results showed that 70 per cent of the mothers did not introduce the book at all but began with the first page, so the mean of this one ranked lowest of all: 1.50. The second scale dealing with the specifity of language used by the mother ranked higher with a mean of 3.0; yet the variation was from vague statements to specific labels. There were few adjectives or adverbs and little detail used in the discussion of pictures. The mean of the third scale was 3.6. It was described as some questions with a pause for an answer; yet the same mothers rephrased the question or asked another until a response was obtained. The mean rating of 2.7 on the fourth scale seemed surprising because 48 per cent of the mothers did not read a single word in the book. Only 30 per cent of mothers read the words expressively. The mean of the fifth scale was 2.9 with a range from pointing to one picture to relating the pictures to the child's personal life. The sixth scale mean was 2.1, showing little elaboration on the sounds which were crucial to the theme of the book. Only 6 per cent of the mothers interacted with children by using sounds as a focus. The seventh scale mean was 3.3, showing some negative and some positive feedback. Twenty-two of the parents used feedback with expansion or repetition. The mean of 3.5 on the eighth scale showed that pointing to things in the book was used between 50 and 75 per cent of the time. The last 2 scales related to the emotional climate between the dyad (a mean of 3.8) and to the sense of humor of the mother, rating 3.4. Few parents received low scores on these items. The coefficient of correlation of the PARS total score with IQ was .30. The scale provided a means of evaluating how mothers read to children and permitted specific kinds of instruction to parents to make it a richer experience.

IV-17 Reading interests

Chiu (55) investigated the reading preferences of fourth graders according to sex and reading achievement. He constructed a

45-item questionnaire by using paired comparisons of statements about each of 10 categories. The matched pairs of statements appeared randomly in the questionnaire, and choice was forced. The subjects were white, middleclass, rural pupils from 4 classes in 2 schools. Subjects were subdivided according to classroom teacher's ratings into high reading (HR), average reading (AR), and low reading (LR) groups. The HR group was younger, by an average of 4 months, than the AR group, which was younger, by 3 months, than the LR group. The questionnaire was administered by the teachers, with no time limits. About a month later, the questionnaire was readministered. Scores for each category ranged from 0 to 9 with a total score of 45 points. Test-retest reliability was .87 for the HR, .68 for the AR, and .54 for the LR groups — with a .72 for the total group. Preferences for boys were, in descending order, sports, biography, mystery, social studies, science, humor or animal stories, adventure, fantasy, and poetry. The order for girls was mystery, humor, adventure, biography, animal stories, poetry, fantasy, social studies, science, and sports. The *t* tests revealed significant sex differences (.01) in all categories except animal stories and mystery, the latter ranking high with both sexes. Analysis of variance among the 3 reading groups showed significant main effects of sex on all categories except animal stories and mystery. No main effects of reading group nor interaction effects were found. By correlating scores from the first and second administration of the questionnaire over the 10 categories for each subject, the median stability was found to be .81.

Johns (160) investigated the preferences of innercity, middle-grade pupils for illustrations, settings, and characters similar to and different from their own environment. The 597 subjects came from large and small cities and included 515 black, and 82 white or Mexican-American pupils. A questionnaire was prepared with 15 forced choices, all taken from modern realistic books of fiction for children. Five choices were between illustrations depicting either the stark, crowded conditions of innercity or the rural living in contrast to uncrowded, pleasant conditions in urban and suburban areas. Along with each picture was a passage from the trade book describing the settings; it was read to pupils. Pupils were instructed to choose a story or book about one of the areas or neighborhoods. Another 5 choices were between a description of a character with positive and one with negative self concept. The last 5 choices were between descriptions of characters in positive and

negative group interaction. Using the *t* test, the investigator found that significant (.001) preferences were expressed for stories or books depicting middleclass settings, characters with positive self concepts, and characters in positive group interactions.

Geeslin and Wilson (108) examined the influence of reading age on the choice of favored books, using 8 and 12 year olds. Class 1 books were the 10 most frequently chosen by about 450 third grade pupils. Class 2 books were rated or submitted by 288 fifth graders and not included in either third or seventh grade favorites. The Class 3 books were selected by 246 pupils in seventh grade but not identified by fifth grade pupils. In the investigation, each of the 10 Class 1 books was paired with each Class 2 book, making a total of 300 choices. Individual conferences were held in which the investigator asked each of 30 eight year olds with reading ages between 10 and 11 to choose the most interesting of the pair. Likewise, 30 pupils of 12 years with reading ages between 10 and 11 chose between Class 2 and Class 3 books. Reading ages were determined by the *Gates Reading Survey Test*, Form 1. The results showed that the younger girls significantly favored Class 1 books while boys tended to choose Class 2 books. Among the older pupils, boys tended to favor Class 3 books; girls in grade 6 chose Class 2 books, while those in grade 7 selected Class 3 books. Both differences for girls were significant. In general, chronological age, rather than reading age, appeared to influence the choices made.

Smith and Johnson (309) tested the hypothesis that readability would be related to expressions of like and dislike of books. The mean age of the subjects was 12-4.5. All were asked to complete a questionnaire at the end of their first academic year in the school; all fictional books from the library which they read were listed. Among them were the first, second, and third choices for enjoyment; the term in which each was read was noted. Of 668 titles, 69 had been read by 10 or more subjects. A sample of 18 books, plus 19 with popularity scores of 25 or higher, were assessed for readability using the Flesch formula. Using a reading ease score of 80 as a cut-off point, books were assigned as *easy* or *difficult* and to either high or low popularity group. Likewise, titles were allocated to 5 major categories based on content. The scores of each book were plotted for reading ease and popularity. The popularity of the less popular books increased as they were easier to read. Among the more popular and difficult books, popularity increased as they became more difficult. Furthermore, the more recently a book was read, the more

likely it was to be popular; and popularity was independent of the subject matter categories.

Cooper and Smith (64) compared the remembered favorite childhood books of teachers to current sixth grade pupils' familiarity with and reaction to these titles. The elementary teachers, from 71 schools in 11 systems, were asked to name, on a questionnaire, their favorite book read before the age of 12 years. The titles named by 10 or more teachers were placed on a questionnaire submitted to sixth graders, who were asked to rank, on a 3-point scale, how well they liked each title they had read. The investigators found 9 titles mentioned by 10 to 100 teachers, accounting for 55 per cent of the total choices. Poetry, except for *Mother Goose Rhymes* and *A Child's Garden of Verse*, was not prominent among the favorites. Only 3 Newbery Award winners and no Caldecott winners were mentioned. The responses of the sixth graders showed that only 44 girls and 19 boys had read or heard all 9 titles, while 5 boys and 2 girls were familiar with none of them; 5.9 was the mean number responded to by the entire group. *Alice's Adventures in Wonderland* was familiar to 81 per cent of this group. More than half of the pupils liked 5 of the 9 titles, but girls liked more (7) titles than boys (2). The conclusion was reached that some of the childhood favorite books of the past generation are still liked by some of today's children.

Long and Henderson (204) investigated the relationships between diaries of use of time by white fifth graders and several personal and social factors. All subjects read at or above grade on comprehension, and ranged in IQ from 85 to 130. Time records were kept in a special booklet for 2 weeks in blocks of 15 minutes. The out of school activity categories, were sleep, reading, TV, homework, chores, organized activity, and free play. The tests administered were *Otis Quick-Scoring Mental Ability Test*, *Gates-MacGinitie Reading Test*, *Self Social Symbols Tasks*, and a test of reading attitude. The last test was composed of 25 *pro* and *con* statements on reading to be rated on a Likert-type scale of 5 points on which the range ran from *agree* to *disagree*. Data concerning parental occupation and age of siblings was provided by subjects. Intercoder reliability ranged from .73 to .97; validity of reports of time spent reading was determined by library books withdrawn earlier (r=.34). In addition, time spent reading correlated .31 with attitude toward reading. Both boys and girls reported activities in this order: sleep, TV, free play, organized activity, homework, reading, and chores. About one-third of the subjects reported no reading during the 2 weeks.

Whereas the average time spent with TV was 15.1 hours per week, the average time spent reading was 1.5 hours. Time spent reading was positively correlated with socioeconomic status (.26) and reading achievements (.18 to .22). Many sex differences were found. More reading was associated with lower self esteem among girls but not among boys.

Elley and Tolley (85) investigated the reading preferences of children in New Zealand as well as the popular authors, books, characteristics of books, and amount of recent reading done. A questionnaire was prepared by a subcommittee of 7 local teachers, 3 inspectors, 2 teachers' college lecturers, 4 librarians, and the authors. Questions were forced-choice, asking for ranking of preferences, or open-ended if the number of possibilities warranted. A pretest of the questionnaire led to simplification and revisions. Approximately 500 children at each of Standards 2 and 4, and Forms II and IV from all socioeconomic levels were included. Answers to the first question showed that about one-third of the boys and one-half of the girls could be classified as "frequent readers," since they ranked reading as one of their top 3 interests. Reading ranked ahead of TV viewing for the entire group, and TV viewing declined steadily from Standard 2 to Form IV in both sexes while reading increased proportionately. Girls chose the more sedentary pursuits, while boys chose active pastimes. Infrequent readers showed greater interests in sports, movies, and listening to music than did frequent readers; but there was little difference in TV viewing. The second question showed that fiction ranked first with all except Standard 2 boys, but it increased in popularity with age. Non-fiction showed a similar trend. Comics and "annuals" ranked high in interest early but dropped markedly by standard 4 and disappeared thereafter. Magazines and newspapers appeared to replace comics. The main difference between frequent and infrequent readers was the greater popularity of comics in the latter group. Boys chose war stories and mystery-detective fiction at all ages. Girls' fictional interests included animals, make-believe, and humor but changed gradually to home, family, careers, and human relations. Girls read boys' novels but boys did not choose those of prime interest to girls. Non-fictional interests followed a similar pattern. The answers to question 3 showed that these students got their books predominantly from public and school libraries. Standard 2 children tended to choose books by looking through library shelves and from family suggestions. Browsing increased with age, while friend and peer suggestions re-

placed those of parents. The jacket flap and the blurb were important in choices. Books must be exciting to be enjoyed by both sexes. Younger children like funny or spooky books, while a book must be unusual to appeal to older children. Boys thought a book should be informative, while girls liked them true-to-life. Favorite authors ranged widely with only 6 cited frequently. Again, there was a change with age. Favorite books showed such a range that there was little value in making a useful list. Books read recently showed a similar trend. Every pupil from Standard 4 upward read newspapers. World news ranked first with both sexes, local news second, and sports third for boys and TV-radio news third for girls. Choices in comics went first to Walt Disney, with *Donald Duck* the favorite.

A study of the relationships between sex, grade placement, and intelligence variables with the reading interests of high school students was reported by Scharf (297). Intelligence test scores were obtained from the *California Short Form Test of Mental Maturity* for 122 freshmen, 123 sophomores, 102 juniors, and 67 seniors. Of these, 205 were boys and 209 girls. Student interest data were collected by means of a questionnaire. Although no data are given, the author reports that differences in reading interest existed between grade levels, among intelligence levels, and between sexes. Seniors seemed to read more materials regularly and students with higher scores on the intelligence test had a tendency to read more. Boys preferred newspapers and magazines and reading about sports, world, war, and crime. Females tended to read books more frequently than did males. Girls preferred reading poetry, drama, autobiography, and novels more than did boys. Students with higher intelligence test scores showed a greater tendency to read a newspaper regularly and to use the library on a more regular basis.

IV-18 Readability and legibility

The literature on readability and legibility section is composed largely of various studies of the cloze procedure. In part, these reports were assembled in the *Yearbook of the National Reading Conference*, but a smaller number appeared elsewhere. The majority of these reports used adult subjects. Two investigations relate to legibility.

Peterson, Peters, and Paradis (258) reported an exploratory study to relate cloze percentages to the Betts definition of instructional level for high school, trade school, and college students. The 64 high school students were eleventh graders in a suburb of an

industrial city; they were judged to be average readers. The 28 vocational school students, also eleventh graders, were enrolled in appliance repair courses. The 42 technical students were post high school and enrolled in a medical technology training program. The 42 upper division university students were enrolled in a reading methods course. The grade equivalent reading score was obtained from the *Nelson-Denny Reading Test* or the *Nelson Reading Test*: Comprehension subtest. The cloze tests were 7 selections of about 275 words from the area of health education. The difficulty levels of each selection were determined by the Dale-Chall Readability Formula. The passages ranged in difficulty from below grade 4 to above 16. After the first sentence was left intact, every fifth word was deleted. Passages were assigned to subjects as closely matched to their reading test comprehension scores as possible. Exact word replacements were counted as correct. The mean cloze percentage for the total group was 50. However, the general and vocational high school groups scored 57, while the technical and college students scored 43 and 44 respectively. This inconsistency occurred despite mean grade reading levels ranging from 4.9 (vocational high school) to 14.3 for college students. Obviously the percentage scores were not in agreement with previous reports, so a number of possible explanations were offered.

Ramanauskas (271) tested the hypothesis that in the cloze test, linguistic constraints over segments of the text longer than the sentence produce higher scores than when sentence order is randomly arranged. Her subjects were 58 white educable mentally retarded pupils attending junior high classes and scoring at grade 2.5 or above on word identification on the *Wide Range Achievement Test*. Group 1, composed of 17 boys and 12 girls, read materials in their natural sentence order (NAT) first, then in modified sentence order (MOD). Group 2 received MOD first and NAT second. No significant differences were found between the measured characteristics of the 2 groups. The cloze materials were taken from 2 basal readers; both were the second stories of the second readers at the second grade levels. The first 304 words of Selection A and 302 words of Selection B were used. Each NAT and its corresponding MOD was set up on 2 pages. Fifth-word deletions resulted in 60 blanks in each selection. The MOD version was developed by numbering the sentences over both selections and randomizing the numbers. The same blanks appeared in each sentence in both selections so that the probability of using within-sentence constraints

was unchanged. Subjects were assigned randomly to each treatment by sex. Appropriate examples preceded the testing. There was no time limit, and accuracy was emphasized. Three judges scored each item. Each subject's correct responses for the NAT and MOD blanks were totaled separately. Analysis of variance showed a significant (.0005) main effect of Type of Material, with natural sentence order superior to the random sentences. Neither the Order of the 2 selections nor the Type of Material and Order interaction was significant. Thus it was clear that the unmodified text was significantly more readable than the modified text. Yet readability formulae which consider letter, syllable, word, phrase or clause counts, or word familiarity or word counts would have yielded equivalent readability ratings.

Ohnmacht and Fleming (249) explored relationships among perceptual closure, associational fluency, vocabulary, and performance on 4 types of cloze tasks with college students to determine whether cloze performance is factorially complex. Replicating a previous study with high school subjects, the following tests were administered: 1) Speed of Closure: *a*. Gestalt Completion Test, *b*. Concealed Words Test; 2) Flexibility of Clozure: *a*. Hidden Patterns Test, *b*. Hidden Figures Test; 3) Associational Fluency: *a*. Controlled Associations Test, *b*. Associations IV; 4) Verbal Comprehension: *a*. Wide Range Vocabulary Test, *b*. Advanced Vocabulary Test; and 5) Cloze Tests: *a*. Structural Cloze, *b*. Lexical Cloze, *c*. Abstract Cloze, *d*. Concrete Cloze. All test scores were intercorrelated, and 32 of the 66 were significant, in contrast to 65 of 66 among high school students. Also, 5 of the 16 correlations between perceptual tests and cloze tasks were significant, while 15 of 16 were significant in younger students. Factor analysis of the intercorrelation matrix yielded 3 factors. Factor 1 was a general cloze factor on which the 2 Vocabulary tests had small loadings. Factor II was the perceptual factor on which the Concrete Cloze loaded (50) and the Structural Cloze (31) to a lesser extent. Factor III was a verbal ability factor, on which the Abstract Cloze showed a small loading (33). These patterns among older students differed from those of dependence on vocabulary and associational fluency. Some refinements in procedures for establishing an abstract noun category in cloze tests are suggested. The linguistic variables were suggested as one of the major "underpinnings" of the stimulus materials.

Tuinman, Flanigan, and Blanton (339) investigated the awareness of alternatives considered possible in cloze tasks by col-

lege students. Two studies were reported, the first using difficult materials and the second using easier materials. In both studies, a practice passage was used and subjects took a paper and pencil 60-item cloze test of low difficulty. In Study 1, passages A and B were used; in Study 2, passages C and D. Each was about 100 words in length with 20 blanks. Passages A and B were from a philosophical text, while C and D were from popular magazines. The passages were reproduced on an overhead projector. The subjects were 2 groups of 25 volunteers each. Subjects took the test individually. Before each subject were 20 numbered keys, corresponding to the 20 deletions. Subjects were told to punch a corresponding key every time they thought of a word that might fit in the blank and to call out the word when the final choice was made. The results showed that passages A and B were very difficult with the mean correct responses about 2. However, the average number of pushes per item was slightly less than 1.5. Of the 500 responses to items in passage A, 353 or 71 per cent were single responses. Total pushes per subject in passages A and B correlated .88, suggesting reliability. Analysis of variance showed that the search for cloze words may be affected by either the subject or the items. In the second study, the cloze difficulties of passages C and D were 33 per cent and 71 per cent respectively. The average number of button pushes were 1.21 for C and 1.19 for D.

Martin and Harndon (210) determined the effects of 10 and 30 per cent random word deletions upon comprehension, as assessed by a specially designed set relations test. The material used was a 1,620-word fictional story written in traditional style (A). The central ideas of the story were analyzable in terms of basic set relations. Important information described the set relations, while narrative was unimportant or descriptive materials unrelated to the set. Two versions of the story were written: 1) 10 per cent of the words were randomly deleted (B), and 30 per cent deleted (C). The deletions were randomly done by computer. The 66 subjects were randomly assigned to the 3 treatments. Subjects recorded the time when they finished reading then opened their test booklets and answered the 20-set relation true and false questions. Ten were concerned with nested relationships, while 10 included disjunctive relationships. Four dependent variables were total number of correct responses, reading rate, reading time, and S-score. The last score included pseudo-discrimination, or one when there was none, and overgeneralization errors when subjects forgot that some or no members

of a set were included in another set. The S-score was the number of correct nested items minus the number of disjunctive items + 10 (to avoid negatives). Four 1x3 analyses of variance were performed. A significant treatment F showed mean differences between A and C versions but none between A and B or B and C. Analysis of reading rates showed significant differences between A and C but no others. Neither reading time nor S-score distinguished among the 3 groups. The data showed that it was possible to randomly delete 10 per cent of the words without decreasing comprehension of the basic set relationships, but a 30 per cent deletion reduced comprehension 17 per cent.

Taylor (332) investigated the effects of preceding and following context on the cloze responses in prose. Forty-five prose fragments, each of 11 words with the middle word replaced by a blank, were systematically drawn from a short story. The fragments were made up of different but neighboring sentences. Three cloze versions were prepared: 1) 5 words on each side of the blank (Sur); 2) 5 words before the blank (Pre); and 3) 5 words following the blank (Fol). Three versions — each of 45 fragments — were systematically sorted so that one set presented every version of every fragment once. Each cloze response was scored *like* or *unlike*: 1) the original deleted word and 2) the responses of other subjects, 6 of whom responded to each set. Guesses which matched the original (MO) were summed. A frequency of interagreement (fIa) was obtained within each group of subjects for every fragment, and summed to obtain an overall subject-interagreement (SI) score. Then responses to Pre and Fol were compared with Sur responses. All SI scores were transformed into vSI ratings from 1 through 9. Comparing Pre with Fol, the contexts were approximately equal on cloze scores. To equate the amount of context, the Pre/Fol scores of 12 subjects, based on the same context, were compared to the Sur scores of 6 subjects. The means of matched originals over 45 fragments did not differ significantly. However the 2 distributions correlated .59. Comparisons of vSur and vPre/vFol distributions correlated .29, but the sum of the latter was significantly larger than that of the former. Counts of fIa and corresponding MO's were summed over 15 responses to the 3 versions of each subject. The matched original percentages of fIa averaged, over each group of subjects were 67.7 per cent for A, 56.6 per cent for B, and 64.3 per cent for C. The conclusion was reached that there were no dependable differences

between the influence of proceding and following contexts on cloze responses.

Nestvold (237) tested the hypothesis that readers' perceptions of the difficulty of a passage should be more closely related to cloze scores than to certain readability formulae scores or other characteristics of difficulty. The materials were 30 sentences chosen from the beginning, middle, and end of each of 10 magazine articles ranging from *Sports Afield* to scholarly research journals. The 10 passages were read by freshmen through graduate students, with each passage read by an average of 41 students, while reading time was recorded. Then the subject filled out 6 evaluations of the passage. The evaluations were 7-step semantic differential scales, one of which was "easy-to-read/hard-to-read." Finally each subject was given a second copy of the passage with about 50 words deleted by the cloze procedure, and words were filled in. Rank order tau correlations were computed between the subjects' evaluation of the difficulty of the passage and 6 readability measures: cloze, .511; McLaughlin SMOG, .467; sentence length, .467; Danielson-Bryan computerized formula, .422; words per sentence, .422; and words read per second, .289. While the first 4 coefficients were significant beyond .05, only the cloze was significant at .023. The conclusion was reached that the cloze procedure evaluation more nearly approximated college students' perception of the difficulty of passages than did any of the other measures.

Ratekin (275) sought to discover if any differences could be found in comprehension of materials presented inductively and deductively on multiple choice and cloze tests. He devised a test of Comprehension of Logical Patterns, composed of 2 sections; one multiple choice and the other cloze tests. Each section was divided into 2 parts, one presented inductively and the other deductively. The 3 sources of the selection showed passage difficulties on the Fry scale as grades 10, 12, and college levels. The data were analyzed by the *t* test. On both the multiple choice and cloze tests, the deductive scores were significantly lower, with the cloze difference somewhat greater. Coefficients of correlation were computed among the subtest scores. When test form was constant, the cloze tests correlated .80; the multiple choice tests correlated .24. The conclusion was reached that multiple choice tests discriminate between inductive and deductive patterns better than do cloze tests.

Oller, Bowen, Dien, and Mason (251) investigated the cloze test by making a comparison between the performance of natives

and non-natives in 3 languages. Specifically, twelfth grade Thai and Vietnamese students who had studied English as a foreign language for 6 years were compared to American high school students. The cloze tests of 40 items each were 3 original passages (one in each language) and 4 translations: one each into Thai and Vietnamese from English, and one each into English from Thai and Vietnamese originals. The English original (EO) came from the *Reader's Digest Readings*, Book 3 while the Thai (TO) and Vietnamese (VO) originals came from similar publications. Translations were made of EO to Thai (TTEO) and to Vietnamese (VTEO), and translations to English of VO (ETVO) and of TO (ETTO). American subjects each completed EO, ETTO, and ETVO in 45 minutes. The Thai and Vietnamese completed, in 90 minutes, one of the following sets: EO-TO, TO-EO, ETO-TTEO, or TTEO-ETTO; or EO-VO, VO-EO, ETVO-VTEO, or VTEO-ETVO. All cloze blanks were scored twice: 1) using any contextually acceptable single-word response and 2) acceptable multiple-word response. The mean responses on the second scoring had a narrower range but were fairly equivalent to the first, except for the Thai's, whose scores increased about 11 per cent. This difference may be due to the fact that the Thai writing system does not mark word boundaries. The mean scores of the tests of native speakers were close enough to suggest that the passages were equal in difficulty. Also, the results suggest that it does not matter which language is translated. Should this finding hold for other languages, the authors suggest that the cloze procedure would permit a foreign language teacher to evaluate his students' progress toward the performance standard of the language of the native. The subject reliability of the cloze tests for non-natives was .95 to .98 and the item reliability was .80 to .86. Reliability for natives was much more variable. Item analysis of the first scoring showed fewer discriminating items for native cloze completions than for non-native. Various analyses of errors were undertaken to determine meaningful categories for comparison among languages. On a subjective basis, 6 categories were derived. The qualitative analysis showed that native speakers seldom made a response that did not conform to at least some of the contextual constraints of the passages, whereas non-natives frequently made such errors. An analysis of the grammatical function of the majority of fill-ins by native speakers was made. The results showed that the ease or difficulty of the item cannot be predicted by the tendency of natives to use few or many responses

Robinson (281) evaluated the cloze procedure as an alternative to methods of testing adult's reading abilities to select appropriate materials for reading. The subjects for the study were 57 men selected from a population of 2,000 inmates in a United States Federal penitentiary. The subjects had an IQ of 90 or above on the Revised Beta Examination and received scores between grades 4.0 and 7.9 on the *Stanford Achievement Test*, Word Meaning and Paragraph Meaning. All men volunteered to take the test. The passage dealt with the harmful effects of smoking. There were 50 deletions of each of these 3 types: Multiple choice (for fifth word), fifth word random deletion, and fifth noun or verb deleted. Exact replication was scored correct. Cloze ranking tests included 7 selections, each with 50 deletions, also ranked by the following readability formulae: Lorge, Gunning, Dale and Chall, and Spache. A questionnaire was constructed, including 10 items concerning general and specific feelings about cloze items. Five responses ranged from *strongly agree* to *strongly disagree*. Stepwise regression analyses using intelligence, and 3 cloze tests were used to predict subtests of the Stanford. The regular 5-word deletion cloze proved to make the largest contribution as a predictor of both Stanford subtests. A comparison of the average cloze score on the 7 selections showed 6 to be almost equivalent, while the formulae revealed large differences (*e.g.*, Gunning range from grades 4.07 to 15.17). The coefficients of correlation between the cloze and others were Lorge, .143; Gunning Index, .322; Spache, .604; and Dale-Chall, .464. None were significant, even at the .10 level. The opinion survey showed that subjects had a positive attitude toward reading and that they viewed the cloze test as understandable, interesting, and a source of new information.

Geyer and Carey (109) assessed the validity of the cloze procedure as a predictor of comprehension of social studies materials, comparing it to standardized reading tests, IQ's, and previous social studies grades. Moreover, the problem of rewriting the materials on an easier level was examined. The subjects were an unidentified number of junior high school students whose reading levels were the fifth to sixth grade or above. The selections were 2 American History texts with identical visual aids and context. According to the Dale-Chall readability formula, one was written at seventh-eighth grade level and the other at fifth-sixth. A cloze test, deleting every fifth word for a total of 50 was prepared on each text. A single multiple choice test of the difficulty of the easier text was constructed,

tried with other students, and reduced to 40 acceptable items. The cloze test was administered first, then the complete selection was read and the multiple choice test was completed. No test questions were prepared on the section with cloze deletions. Coefficients of intercorrelation were calculated between each of reading achievement, social studies grades, IQ, and the multiple choice test. The significance of the differences between coefficients of correlation were determined by a procedure used by Tate. No significant differences were found. Analysis of variance was computed for treatment and ability levels. No significant treatment effect nor interaction of treatment was found. There was a significant difference among ability levels only. Adjustment of the readability level of materials, therefore, did not improve comprehension.

A cloze procedure was utilized by Turner and Gilliland (341) to determine whether it had practical value as a measure of readability. The 40 British secondary students involved in the study were subdivided into 2 groups of 20 on the basis of teachers' assessment of IQ. Group A were within the 100-115 IQ range; Group B ranged from 85-100. Six prose passages exceeding 200 words in length were taken from materials being used with the students. Three passages were chosen as being relatively easy and 3 as being of medium difficulty. Twenty words were deleted from each selection. In addition to filling in the cloze blanks, students were asked to rate a passage as easy, medium, or difficult to understand. A criterion level of 40 per cent accuracy was established. Mean scores from Group A were above criterion for all except one passage. In Group B on only 2 passages were the mean scores above criterion. Group A showed a more gradual response to increasing difficulty of passages than did Group B.

Daines and Mason (72) compared paragraphs from 8 reading tests with the readability level on Fry's Readability Graph Extended Thru Preprimer Level by Maginnis. Comparisons of the plotted grade levels and assigned grades were made by deviation scores, visual inspection, and Spearman-Rank Correlation. Deviation scores were obtained by subtracting the plotted score from the assigned score, maintaining the sign. Average deviations were calculated for each grade level and each test instrument. The highest degree of agreement was with the Spache test which was tested for readability. The primer and first grade selections had highest agreement with 60 per cent for the primer and 67 per cent for first grade. No agreements were found at fourth and sixth grades. In 15 instances

there were no differences in the ratings at contiguous grade levels. Besides all tests contained adjacent passages which varied 3 grade levels, and 5 which varied 4 grade levels. The test with the lowest deviation scores were the Spache, Sucher-Allred, and the *Standard Reading Inventory*. The largest deviations (at upper grade levels) were the Gilmore and the Gates-McKillop tests. Except at fourth grade, deviation increased with grade level. The data showed that 20 of the 75 plotted grade levels agreed with assigned grade levels. There was only 10 per cent agreement above the third grade level or 5 per cent less than would occur by random numbers. Also, 36 per cent of the paragraphs rated below assigned grade level and 37 per cent above it. Coefficients of correlation between Fry's graph and each test were very high (.95 to .99), showing that the test items move from easy to difficult but the increments are not shown by the coefficients.

Cline (59) established the readability levels of 17 textbooks used in a public community college and then compared the findings with the reading levels of newly enrolled full-time students. The Dale-Chall Readability Formula was used to determine readability levels for the textbooks. The Nelson-Denny test was used as the means of assessing students' reading performance. At least 33 per cent of the students enrolled in the classes where the text was being used had reading abilities below the grade placement of the text for 14 of the 17 textbooks. In 11 comparisons, at least 50 per cent of the students had Nelson-Denny scores below the level of the text. At least 75 per cent of the students were below the text for 7 comparisons. In some classes 100 per cent of the students scored below the readability level of the text. In all the classes, 52 per cent of the students had reading scores below the reading level placement of the textbooks.

Two investigations were concerned with legibility of print. Salcedo, Read, Evans, and Kong (292) analyzed the interaction effects of type size, type form, and color of ink on backgrounds in relation to speed and comprehension of reading, reader preference, and ability to follow directions. Twenty-seven pesticide labels were printed in 11-, 8-, and 6-point type. Type forms were lower case, Medley (the first letter of each word capatalized), and upper case. Colors of print and background were black on yellow, black on white, and red on green. These colors were chosen because they varied from "best" to "worst." Three experiments were conducted; the first 2 used freshman students and the last used adult subjects

in the community. Only one version was given to each subject. The directions, printed in the same typographical form as the label, asked that all blanks be filled in except the first 3. Speed of reading was the number of words in the 2 paragraphs read in one and one half minutes. Comprehension was measured by the difference between a pre- and post exposure cloze test with fifth word deletions. Label preference was determined by a Likert-type scale on which subjects ranked ease of reading and degree to which the materials were pleasing to the eye. Analysis of variance across the 4 dependent variables showed no interaction among the 3 experimental variables. None of the factors affected following directions. Only comprehension was affected by type form. Labels in Medley were significantly (.005) superior to upper case; upper and lower case letters were equivalent; lower case and Medley were superior to upper case (.025). Label preference was the only variable affected by color. Black on yellow and black on white were equivalent and both superior to red on green. Type size affected both speed of reading and label preference. Labels in 11-point type were read as fast as 8-point, and 6-point was read faster (.005) than 11-point. However, labels in 11-point type were preferred to the other 2, which were equivalent. To determine the consistency of effects, means of each dependent variable across the 27 treatment combinations for each session were rank-ordered and correlated. Coefficients were so small that they were not considered consistent. The zero-order correlations of the 4 dependent variables show that they do not co-vary appreciably. These data support the conclusion that the 4 measures did not evaluate a single variable.

Follman, Lowe, Uprichard, Roberts, and Villame (99) examined 3 typefaces (Elite, Pica, and Script) to judge Pleasingness, Legibility, Preference, and Reading Comprehension and Rate. The subjects were 10 males and 76 females in an elective education course. The 3 typefaces were IBM Selectric, the main distinction being the width of letters. Spacings, margins, and leading were held constant. A fourth typeface was used for initial information to students. Three passages from the *Davis Reading Test*, Form 1A, were used for ranking Pleasingness, Legibility, and Preference. Rankings for each were done independently as 3, 2, or 1. Following this ranking, subjects were assigned randomly to read the *Nelson-Denny Reading Test*, comprehension passages, with corresponding multiple choice questions in one of the 3 typefaces. At the end of one minute, each student was stopped to write the line number just

read, which provided the rate score. Subjects continued for 19 minutes, answering as many questions as they could. Thirty-six items were used for comprehension. The Friedman's Analysis of Ranks (X2) for Pleasingness was significant (.01). Of the 78 highest rankings, 54 chose Script first, with a few more second choices given to Elite than to Pica. Kendall's Coefficient of Concorance (W) was .23, showing little agreement in ranking order among the 78 rankers. The X2 for Legibility was also significant (.01) with a clear first ranking for Elite and a W of .22. The Preference was not significant and the W was .02. The Kuder Richardson 20 reliability estimates ranged from .78 to .87. The ANOVA for females only and the whole group showed no effect of typeface on comprehension nor on rate.

Coleman (61) reported 5 studies designed to initiate a systematic investigation of the stimulus dimensions that affect the learning of prose. Prior to the report of the experiments was an extensive critical analysis of previous studies. He concluded that if an experiment were to contribute to a technology of written instruction, 4 variables were significant. First, were the stimulus or independent variables. Second, was the response or dependent variables (usually word-for-word memorization which may not represent understanding). Third was the sampling of learners. Fourth was the sample of language. The 5 studies were designed to be examples of various follow-up studies (dealing with language). Experiment I, A Measure of Understanding, began with a miniature language matrix which could be increased by adding content words. Such restricted language (of arithmetic) permits wide variations in syntactic complexity and an extensive number of tasks. In this illustrative experiment, 2 levels of complexity for the universe were combined with 2 levels of language complexity. Each language was represented by sentences of 8, 10, and 12 words. In all, 72 sentences required subjects to perform an operation upon a matrix, half from the simple language, and half that used additional words or complex sentences. Each set of 36 sentences had 12 eight-word, 12 ten-word, and 12 twelve-word sentences. After instructions and practice, the subject controlled the time the sentence was projected before he was to perform the operation. If necessary, it could be projected again. Each subject had a session for the simple and one for the complex language. Both the sizes (2 and 3) of matrices were used in each session. Subjects studied the matrix before projecting the sentences. Time required to understand each sentence was recorded. The results showed that the difference between matrices was insig-

nificant. Mean exposure time per sentence was plotted as a function of length with level of difficulty, and all effects were significant except those due to matrices. The plot showed a strong quadratic effect. Experiment II, Content Word Ratio, included 50 per cent and 75 per cent in 5-sentence lengths. The experimental conditions were similar to Experiment I except that there were 38 sentences (18 with 75 per cent and 20 with 50 per cent), only one session was required, and all operations were on the 2x2 matrix. An analysis of variance showed that all effects and interactions were significant (.01). Both linear and quadratic effects were significant. The results showed that a sharp distinction must be made between content words and function words. For the 12-word sentence, subjects required more than twice as much time to understand the 75 per cent sentences than the 50 per cent sentences. Experiment III, Content Word Ratio, used the same 38 sentences, exposed to another 12 subjects tachistoscopically for .20 seconds. Each sentence was reexposed to correct performance and the measure was the number of exposures. Both main effects (50 and 75 per cent content-word sentences) and length were significant (.05). Experiment IV, Packaging-Clauses into Sentences, used 3 sentence lengths (8, 10, and 12 words) and sentences of either one or 3 clauses. Each combination was learned by 13 subjects. Two samples of 30 sentences (different lengths) were equally divided by number of clauses. Neither complexity of language nor percentage of content words was varied. Subjects performed all operations on the same 2x2 matrix. Presentation and measure were similar to previous experiments, except that each subject had only one sample of 30 sentences in a single session, and both independent variables occurred in alternating orders. Both independent variables exerted significant effects. All subjects understood one-clause sentences in a shorter mean time; longer sentences required more time to understand. The quadratic effect, although not significant, was in the same direction. Experiment V, Depth from Pre-Experimental Vocabulary, refers to the new terms introduced in relation to other terms in the subject's vocabulary. In this experiment, sentences introduced one, 2, or 3 new terms, each being a 3-letter artifical word described in familiar terms. The 3 sentences describing these terms were typed in a table, and each of 22 subjects was allowed to study it for 5 minutes; then it remained before subjects throughout testing. Fifteen sentences, each of 12 words, were generated, equally divided among the number of new terms. Each subject learned all 15 sentences, alter-

nating the number of terms. Both response time and stimulus exposure time were measured. Mean response times for sentences with one, 2, and 3 terms were significantly longer (.001) as was mean stimulus exposure time (.001). These results were expected because more mathematical operations were required as more new terms were used. The foregoing types of experiments offer hope of collecting data on understanding written materials far beyond what has been done previously in studies of readability.

V *The teaching of reading*

The studies classified into this section continue the trend noted in the past several years of increased interest in research related to all aspects of testing and test development. In addition, more studies identified this year fall into the materials category.

V-1 Status of reading instruction

Ching (54) attempted to determine both prereading and reading activities in kindergartens throughout California school districts. Results from a questionnaire survey were compiled to describe selected aspects of the content and conduct of 931 kindergarten programs in 694 schools representing 123 school districts in 44 counties. Of the responding teachers, 41.6 per cent replied that their school districts had a required specific kindergarten reading program, while 58.4 per cent reported that no specific reading curriculum was required. Only 29.1 per cent felt that everyone should participate in a planned readiness program; 42.6 per cent felt that most should, 22.7 per cent felt that some should, and 1.2 per cent stated that no children should be involved in such a program. The majority, 80 per cent, replied that they provided a planned, sequential readiness program for their pupils; 20 per cent replied negatively. Of those teachers who provided formal reading instruction, 60.3 per cent said that they used the language experience approach; 55.3 per cent, experience chart approach; 32.9 per cent, separate phonics; 26.9 per cent, linguistics; 17.4 per cent, individualized reading; 15.5 per cent, basal reader. Findings appeared to indicate a need for clarification and guidance among kindergarten teachers concerning the place of reading as well as the methods and techniques for teaching reading in the kindergarten curriculum. Implications pointed to need for improved communication and guidance from school administrators and improvements in preservice training.

Kiesling (173) examined the cost effectiveness of educational inputs in the reading performance of disadvantaged California Title I pupils. The study examined the tenets that children learn more 1) if they are involved in more minutes of instruction, 2) if they are taught by reading specialists, and 3) if they are in programs in which diagnostic, instructional, and evaluative and in which personnel are well coordinated concerning objectives. The study also attempted to control for socioeconomic characteristics. Data were gathered through personal interview from a sample composed of 6 per cent of the California Title I projects, enrolling 10 per cent of the Title I pupils representing grades 2 through 5. Sufficient data were collected for grade 3 information to be analyzed separately as well as in the data pool of all other grade levels. Multi-regressional analysis was the statistical technique employed. Findings indicated that 1) the minutes of instruction, especially those by trained reading specialists, were consistently related to reading gains; 2) the reading gains were most closely related to the trained reading specialists ($p.<05$); 3) of the variables constructed to measure planning and coordination, only that for hours of planning itself was related to performance. This finding was not replicated when data for grade 3 alone were used; and 4) the socioeconomic variable most closely related to reading gain was that denoting percentage minority (black, Spanish surname, American Indian), and even this relationship was weak. While cost estimates and figures should not be interpreted too literally, findings suggested that $100 per pupil expenditure on instruction by reading specialists working alone or in some combination with paraprofessionals can return an additional one-tenth of gain per month of instruction.

Bridges and Lessler (35) devised a questionnaire to determine how North Carolina educators viewed the goals of first grade learning, as well as the actual bases for performance evaluation (or promotion-retention) in first grade. Nineteen first grade teachers, 22 second grade teachers, 14 principals and supervisors, and 10 university faculty members rank ordered a list of 9 skills and attitudes according to their relative importance as first grade goals and again as criteria for promotion-retention. Frequency distributions of ranks given to each skill and attitude indicated that teachers and administrators rated the ability to understand directions as the most important goal for children in the first grade. University faculty ranked the desire to learn as the most important. The skill which was considered least important by first grade teachers and

administrators was arithmetic skill; second grade teachers chose writing skill, while university faculty ranked discipline as least important. For promotion-retention, first grade teachers and administrators ranked reading as the most important criterion. Second grade teachers ranked understanding instructions slightly higher than reading. University faculty ranked oral language skills as somewhat more important than reading. Discipline was considered least important for retention by all groups. In most cases, the relationships between the skills and attitudes as goals and as reasons for retention were quite low. Correlation was lowest for the first grade teachers and highest for university faculty. The further from the classroom the rater was, the more likely he was to ascribe to more general goals of learning.

Under the auspices of the National Foundation for Educational Research, Goodacre (113) published the first in a series of reports dealing with the problems of teaching beginning reading in Britain. The report concentrated on methods, materials, and conditions in 100 infant schools. Data were collected by means of questionnaires sent to heads and reception class teachers. The schools were representative of London primary schools in general with respect to type of school organization, religious denomination, and social area. Two types of schools were included, infant only (age 5 to 7 plus) and junior and infant (age 5 to 11 plus). Schools were classified into 3 distinct social areas, using occupation as the criterion: Social Area 1 included predominantly lower working class families; Social Area 2, mainly working class; and Social Area 3, predominantly middle-class and white collar. Two questionnaires, one for the head teachers and one for the reception class teachers, were sent. One hundred questionnaires were returned by head teachers, 98 by reception class teachers. Both of the questionnaires were designed in 3 parts dealing with methods, materials, and the assessment of the material and social environment of the school. Pupils' reading attainment was assessed by an estimated attainment in which the teachers were asked to identify which book within a series the child was able to read and by a group standardized test designed for use in the 1960 national survey. The majority of teachers used all 4 of the main methods of teaching reading (alphabetic, phonic, wholeword, sentence) but often in combination. Of the head teachers, 73 per cent described the approach in their school as informal and 13 per cent said that they tended to be formal. Reception class teachers in 37 schools stated that they gave phonic instruction to all pupils, 26

gave phonic instruction to some of their pupils, and 35 gave no phonic instruction to any entering child. Relative to materials, 82 per cent of the schools used a single scheme or basal series, 4 per cent did use a basic reading scheme, and the remaining schools used 2 or more schemes. The majority of schools (88 per cent) supplemented their basic scheme with readers from other series. Two-thirds of the reporting schools had central libraries of some sort with books suitable for infant school children. When asked to predict the reading attainment of their pupils at the end of the primary cycle, head teachers tended to set relatively high standards. On a question relative to the use of tests, 43 per cent replied that they used a standardized achievement test. Special provision was made for backward readers in 52 of the schools while 48 schools reported that they had no special provisions for these children. The majority of teachers in the infant schools had been educated to teach at this age level. Mean scores on achievement tests at the end of the infant school period showed that children in lower working class schools achieved at a level markedly below that of schools in other social areas.

Cockburn (60) described results of a yearly reading testing program conducted in one Scottish county by the Child Guidance Service from 1962 to 1972. All 7 year old school children (approximately 1,500 per year) were tested by their teachers annually on a word recognition test; in 1962, Schonell's *Graded Reading Vocabulary Test* was used, and after 1962, Vernon's *Graded Word Reading Test*. The year following each reading survey, the 100 to 200 students who read fewer than 10 words on the test were retested by the Child Guidance staff on Daniel's and Diack's *Standard Reading Test* and other unnamed instruments. In addition to the initial surveys and one-year follow-ups, a survey was conducted in 1969 in which children aged 10-3 to 11-2 who had been tested on the Vernon test at age 7 were retested on the *National Survey of Attainments Test*. The reported statistical techniques used in analyzing the data were a chi square and *t* test, both used to determine the significance of difference between number of "poor readers" identified in 1966 and 1968. Other information reported included selected descriptive statistical information, observed trends, and examples of specific data such as scores obtained by 7 year olds on the Vernon test in 1972. Results indicated the 1) there was a wide range in the Vernon test scores of 7 year olds; 2) the size of the group experiencing severe reading difficulty had fluctuated over the 11 years and in-

creased continuously from 1967 to 1970 with the difference between the number of poor readers in 1966 and 1968 found to be significant at the .01 level; 3) by 7 to 8 years of age, there is a group of children who are likely to have serious difficulty with reading unless some aid is given; 4) the survey testing of 1,390 7 year olds in 1966 failed to identify 43 students who were later identified as poor readers at age 11; and 5) 80 of 88 students labeled as poor readers in the 1966 initial survey were again labeled poor readers on the basis of test performance in 1969.

V-2 Comparative studies

Start and Wells (319) summarized the findings of a national survey of reading comprehension undertaken in 1970-71 by the National Foundation for Educational Research in Britain. This report was the most recent in a series of 8 whose purpose is to provide baseline data on the standards of reading comprehension. The survey included children aged approximately 11 and 15. Instruments used included the *Watts-Vernon Test (WV)* and the *National Survey Form Six (NS6)*. The population came first from a random sampling of schools stratified by type and size and then further from samples by computer according to date of birth. Pupils in private and special schools were excluded from the sample. Only 73 per cent of the primary schools that were randomly selected agreed to take part in the testing program. At the 11 year old level, the mean scores on the *WV* test rose with each succeeding testing period from 1948 to 1964. However, the 1964 mean score was significantly higher than the 1970 mean achievement. On the *NS6* test, mean scores dropped from the 1960 testing to the 1970 testing, although the difference was not statistically significant for this test. The data on the 15 year old sample showed little difference between the 1960-61 means and the 1970-71 means on either the *WV* or the *NS6*. In particular, the samples obtained at the 15 year old level may not have been random, due to a postal strike cutting off communication and to a high absenteeism rate among students. The final sample size was only about half the size the design called for. An analysis was made of the reading scores of 11 year olds who had been taught to read by the i.t.a. medium. The sample of i.t.a. pupils was quite small, but their median score on the *WV* was about 4.4 points lower than that for TO pupils and about .6 lower on the *NS6*. At age 11, the mean scores for boys on both the *WV* and *NS6* were slightly but not

significantly higher than those for girls. However, the sex bias changed at the 15 year old level, with girls scoring slightly better than boys on both tests. Data for type and size of school as well as rate of illiteracy are also presented.

V-3 Early reading

A follow-up study of early entrants into elementary schools was undertaken by McLeod, Markowsky, and Leong (219). Thirty-six early entrants (23 females, 13 males) were described in terms of achievement and social adjustment at the close of the second grade. The subjects were children who had entered school at age 5 with birthdates in January or February. The group was divided into upper and lower socioeconomic levels on the basis of a housing report, information from city maps, and professionals' ratings. A control group of 36 regular entrants was selected from the homerooms of the experimental group and matched for sex and grade. In addition, the early entrants were compared with 43 children who failed to meet the early entrance requirements the previous year (rejectees) and so had begun school as regular entrants the same year as the early entrants. Three age divisions for the control group were made on the basis of the third of the calendar year in which the birthdate of each subject fell. With the number of pupils in each group held constant through random deletion, analysis of variance was employed to test differences among various groups with the mean achievement score on selected subtests of the *Metropolitan Achievement Test*, Primary II, serving as the dependent variable. There appeared to be no significant difference in achievement between early and regular entrants or between early entrants and rejectees. Nor was there a significant difference within the control group based upon birthdate. Further comparisons were made between upper and lower socioeconomic levels of the school districts through a series of *t* tests. Among the upper socioeconomic level students, the early entrants were performing as well as the regular entrants, while the rejectees were achieving significantly better than their classmates. This seemed to indicate that some of the upper-level rejectees would have succeeded academically had they been admitted a year earlier. However, findings for the lower socioeconomic rejectees seemed to indicate that they were significantly underachieving when compared with the regular entrants or with higher socioeconomic level rejectees. No significant differ-

ences in sociometric ratings of early entrants, rejectees, and regular entrants were found. Teacher rating of the early entrance program was equivocal; however, parent reaction appeared to be favorable.

Subjects for the study of early reading by King and Friesen (175) came from kindergarten children in Calgary, Canada. They attempted to note any differences between kindergarten readers and non-readers on the following variables: sex, age, intelligence, vocabulary, listening comprehension, following directions, auditory discrimination, auditory blending, visual discrimination, visual-motor coordination, knowledge of letter names, word recognition, rate of learning to read new words, and family and experiential background. In addition, they studied differences between the 2 groups on vocabulary, comprehension, and word recognition after a year in school. The 11 boys and 20 girls who were identified as early readers met the criteria by being termed so by kindergarten teachers toward the end of the school year and by scoring at grade 1 level or higher on the Word Recognition and Word Analysis subtests of the *Durrell Analysis of Reading Difficulty*. Non-readers were randomly selected fron the same kindergarten classes. Information on home and experiential background was obtained by means of a parent questionnaire. Three standardized tests were given to assess children's abilities: the *Lorge-Thorndike Intelligence Test*, Level 1; the *Gates-MacGinitie Readiness Skills Test*, and the Learning Rate subtest of the *Murphy-Durrell Reading Readiness Analysis*. At the end of grade 1, additional information was obtained from a teacher questionnaire and scores on 3 forms of the *Gates-MacGinitie Reading Test*, Primary A, Primary B, and Primary C. The determination of which form to administer was made on the basis of scores on the Durrell Analysis. Statistical analyses used included a multiple discriminant analysis and chi-squares. For home and socioeconomic variables, mothers' educational attainment, and fathers' occupation were higher for early readers. Early readers had a mean IQ of 111.11 compared with 100.79 for non-early readers. The kindergarten readers tended to watch less television but to favor more sedentary activities than the others. On the multiple discriminant analysis, intelligence, visual discrimination, letter recognition, word recognition, and rate of learning to read all favored the early readers. The 2 factors found to be the best indicators of early reading achievement were word recognition and rate of learning new words. At the end of a year of instruction, oral work, reading, vocabulary, and comprehension were significantly corre-

lated for the early readers but only vocabulary and comprehension were highly correlated for the non-early readers. The mean score of non-early readers on the oral word reading test after a year of reading instruction did not approach the mean score of early readers prior to their receiving formal instruction. Teacher's questionnaires showed different profiles for the 2 groups with more early readers generally rated higher on such traits and abilities as self-reliance, curiosity, attentiveness, work habits, memory, and speaking vocabulary.

Christina (56) compared the efficacy of learning 8 words presented by a look-say technique and by look-say augmented by tracing, when the words were printed in either the i.t.a. or traditional orthography. Subjects were all 120 kindergarten children from 2 schools. During the spring of 1970, children were randomly assigned to one of 4 treatment groups of 30 children each. They were then individually taught a set of 8 words by one of 2 alphabet systems and by one of 2 methodologies until mastery was achieved. Each child was checked for retention approximately 24 hours later and again after one week. No significant difference was apparent for learning and retention of words taught in either i.t.a. or TO. Significant differences were found between the tracing and look-say groups, favoring the tracing technique for initial learning of words. The differences disappeared when retention was checked after 24 hours and again one week later. There were also no indications that interaction of orthography and presentation technique affected the rate at which these children learned or retained words.

Ollila and Olson (252) compared the effectiveness of 3 different methods of presenting new words to beginning readers. One hundred fifty children representing upper-middle socioeconomic levels were selected from kindergarten classes of a midwestern suburban school district and assigned to one of 3 treatment groups. Four words of high frequency and concreteness were selected from the grade 1 section of Rinsland's *A Basic Vocabulary of Elementary School Children* and taught to the children by one of the following: the word presented alone, the word with a representative picture, or the word with a representative concrete object. Using analysis of variance, the researchers reported no significant differences found among the 3 methods of presentation for the kindergarten girls. However, significant differences ($p<.05$) were found for the boys. Further comparison using the Newman-Keuls method revealed that the word-object technique was significantly different from the word method at the .05 level with the latter being favored. No differences

were found between word and word picture methods, nor between word-picture and word-object methods. For both sexes under investigation, the word method showed a trend toward most rapid learning, requiring the fewest presentation trials before mastery was obtained.

V-4 Reading readiness

Silberberg, Silberberg, and Iversen (305) attempted to determine whether formal kindergarten training in reading readiness (in particular, recognition of letters and numbers) resulted in higher reading levels by the end of first grade. The sample consisted of 4 kindergarten classes in 2 schools, providing an experimental and control class in each school with a total of 109 children still available for end of first grade testing. All children were administered the *Gates Reading Readiness Test* in the early spring of their kindergarten year. The experimental classes were then given 15 minute lessons daily for 8 weeks in the training of alphabet and number names, while the other 2 classes participated in the regular informal kindergarten program. The *Gates Reading Readiness Test* was also used as a first post test immediately following treatment and as a post test at the beginning of first grade. In addition, each child was administered a *Draw-a-Man Test*. The initial retesting showed that the experimental group responded to training, achieving a level of recognition of numbers and letters greater than that of the control group. At the end of grade 1, all subjects were given the *Metropolitan Achievement Test (MAT)* and the *Wide Range Achievement Test (WRAT)*, Word recognition. Analysis of variance was used to compare treatment effects for boys and girls scoring in the upper, middle, or lower third on the readiness pretest with performance on the *MAT*. Measured reading readiness before treatment was found to be significantly related to end-of-first grade achievement. Girls were found to have achieved better than boys. When readiness pretest scores were recomputed, utilizing only selected subtests, again no significant experimental effect or interaction effects were found. Similar results were evident when achievement on the *WRAT* subtest of Word Recognition was the criterion available, and achievement on the *WRAT* at the end of first grade was found to be a function of reading readiness one year earlier. No sex differences were found in addition to no significant treatment or interaction effects on the *WRAT*. Analysis of the *Draw-a-Man Test* indicated significantly higher test scores for girls than for boys; yet when

standard correction was applied, no differences in average IQ between groups of boys and girls were apparent. The researchers concluded that formalized training in letter and number recognition alone does not affect eventual ability to read.

O'Donnell and Raymond (247) described the effects of 2 readiness programs on the subsequent performance of an unspecified number of kindergarten classes in one Maine community. During the 1967-68 school year, teachers and pupils were randomly assigned to the treatments. One group of children received reading readiness instruction centered around workbooks and seat work of the basal reader. The other group received informal experiences designed to foster concept attainment and language development (conceptual-language approach). In all other respects, the kindergarten classes followed similar daily schedules. After 116 instructional days, children in both groups were administered a battery of standardized tests. The researchers reported that the principal statistical technique applied was analysis of variance, using covariance whenever the assumptions could be satisfied. Variables studied were visual and auditory discrimination, knowledge of letter names, and reading readiness achievement at the end of kindergarten. In addition, chronological age, sex, intelligence, socioeconomic level, and adjustment to school were examined. Statistically favorable results were found for the conceptual-language approach when scores on both the *Metropolitan Readiness Test* and the *Sheldon Visual Test* were compared for the 2 groups. When the interaction effects of treatment and intelligence were examined, significant differences with children of all ability levels were noted in favor of the conceptual-language classes. The most pronounced difference, however, was in the readiness gains of children of below average intelligence in the conceptual-language approach. No significant differences between treatments were apparent on the *Wepman Auditory Discrimination Test* nor the Murphy-Durrell subtest of knowledge of letter names. When initial variation in developmental levels as defined by the *Gesell School Readiness Test* were statistically controlled, there were no significant differences in the readiness gains between immature and mature children in either approach. Neither approach appeared to favor boys or girls, younger or older children; however, when intelligence was controlled, older children did significantly better in both treatments than younger children of comparable ability. Some evidence was presented to support the hypothesis that pupils in the conceptual-language

groups were superior to children in the basal classes in all situations that included involvement, sharing, and completing assigned work. Analysis of 3 independent teacher ratings revealed no observable changes in the adjustment of children.

Jester (158) analyzed the performances of 190 children (aged 36 months) on the *Stanford-Binet Intelligence Test* after their exposure to a structured program of infant stimulation for varying time periods. Factor analysis was employed in attempt to isolate clusters of items which could be identified with the child's later success. The author identified 3 factors as distinctly related to reading readiness: Language, Memory, and Perceptual-Motor skills. Means and standard deviations were computed for each of the factors by length of time participating in the infant stimulation program (from zero to 3 years). Children who spent 3 full years in the program scored higher on both the Language and Memory factors, with the difference between the 3-year participants and the children participating one year or less significant at the .05 level. Means for the Perceptual-Motor factor did not vary significantly with time spent in the program. In an attempt to determine at what point(s) stimulation may have its greatest effect, data were analyzed for groups of children who started and ended (and in some cases, started again) stimulation during the 3-year project interval. For the Language Factor, stimulation for 3 years produced significantly higher means ($p<.05$) than no stimulation, or stimulation during the first or second year only. Seemingly, stimulation during the third year seemed to have the greatest impact, while one year of stimulation at ages one or 2 seemed not to change the child appreciably from no added stimulation. Similar results, (for example, long term stimulation produced significant differences) appeared for the Memory Factor. Performance on the Perceptual-Motor group of items reflected significant differences for children who participated in the program between the ages of one and 2. The author concluded that systematic intellectual stimulation did make a difference in the performance scores of children and has implications for readiness to read.

Brown (38) compared 6 approaches to training 120 preschool children (aged 56 to 80 months) in 8 types of blends using, approximately the same number of boys and girls. Each child was asked to blend 24 different words on each of 4 testing days, with a final test consisting of 32 words on the fifth day. Most of the words were selected from Rinsland's list of most frequently used words for first

graders with additional words and nonsense syllables added to effectuate balance in word catagories. Words were varied in presentation order: either hard to easy, easy to hard, or mixed. Words for a given day and a given group were randomized separately into 4 word orders. Data were analyzed in terms of number of words blended correctly for each of 8 stimulus blending patterns. As expected, results of analysis of variance indicated that syllables were easier to blend than phonemes. Findings of earlier studies of 2-phoneme blending were resubstantiated in that VC (vowel-consonant) blends were easier than CV (consonant-vowel) blends. These results held true for double phoneme blending also. Effect of the CV break type on syllable blending would seem to occur only for double syllable CV blends. Increase in word length to double phoneme blends produced a higher number of correct responses. Single syllable blends appeared easier than the double phoneme blends, reinforcing the contention that greater length of the parts to be blended contributed to the recognizability of the total word. There were some indications that order of presentation influenced test results.

Ratings by mothers and teachers of children on the Preschool Attainment Record (PAR) were compared by Lederman and Blair (191) for their effectiveness in predicting school readiness. The children were in a Title III program nearing the end of the kindergarten year. The PAR consists of 14 items that measure development from birth to 7 years of age for each of 8 categories of developmental behavior in physical, social, and intellectual categories. Mothers and teachers were administered the standardized PAR interviews and the data analyzed. For the 28 children, teachers had a mean rating of 107.5 and mothers, 110.72. The mothers' ratings were significantly higher at the .05 level for a one-tailed test. Two subtests of the *Metropolitan Readiness Test (MRT)*, Word Knowledge and Numbers, were administered one year after the PAR assessment data were obtained. The coefficient of correlation between the *MRT* and the attainment quotient on the PAR was .69 for teachers' ratings and .46 for mothers'. These latter coefficients were obtained on 30 children, 20 of the kindergarten children used in the first part of the report and 10 preschool children.

Sprigle (316) presented several types of data on the effectiveness of *Sesame Street* with poverty children. Using the 6 subtests of the *Stanford Achievement Test*, he compared the performance of *Sesame Street* graduates who had viewed the program for one year at the end of grade 1 with that of their classmates. Non-*Sesame*

Street children performed significantly better (.001 level) on all subtests than did *Sesame Street* children. The latter group performed at low grade level with mean grade scores ranging from 1.2 to 1.4. Classmates' mean scores ranged from 1.9 to 2.8. Other data reported post first grade achievement of *Sesame Street* graduates and a group of matched control children. No statistical differences in achievement were noted. In another study, the effects of different time lengths of exposure to *Sesame Street* were evaluated. Two groups of 24 children were randomly selected on the basis of age, sex, parent education, parent occupation and income, and similarity of background. All were poverty children. Both experimental (E) and control (C) groups attended all-day programs. The E group watched *Sesame Street* daily as part of their day care program, while C children attended a center with a conventional day care program. The *Metropolitan Readiness Test (MRT)* was administered to both groups early in grade 1. C children scored higher that E children on all subtests except for Word Meaning. E children were further subdivided into those who had viewed *Sesame Street* for one year and those who had watched it for 2 years. No statistically significant differences were found between the 2 E groups on any subtest measures of the *MRT*. Analyses were also presented of the adult-child interaction communication patterns on *Sesame Street*. When appearing with children on *Sesame Street*, adults talked almost 90 per cent of the time, initiated the activity 100 per cent of the time, and controlled or dominated an activity 100 per cent of the time.

V-5 Teaching reading—primary grades

Hartlage, Lucas, and Main (136) compared 3 different approaches to beginning reading instruction (linguistic, basal or look-say, and i.t.a.) to determine if any one approach was more effective in establishing basic word recognition skills by the end of first grade. Prior to first grade, 814 children (Male=401; Female=413) from a suburban metropolitan school district were administered the *Metropolitan Readiness Test* to establish initial levels of reading readiness. Each child was assigned to one of the 3 treatment groups for the duration of first grade. The 29 teachers were randomly assigned to a teaching method, and all children within each building were taught by one of the 3 methods. At the end of first grade, each child was individually tested for word recognition skills with the *Wide Range Achievement Test (WRAT)* with half of the alphabet group

receiving the test in TO and half in i.t.a. The 3 methods were compared on both *WRAT* grade levels and standard scores. The Welch *F* test was used. Repeated *t* tests were computed between methods. Traditional and special alphabet test forms were compared for subjects taught by the special alphabet methods with a *t* test for correlated groups. There were significant differences among *WRAT* scores of children taught by the 3 methods. The i.t.a. approach produced the highest *WRAT* grade equivalent scores, followed by the linguistic approach. Children who took the i.t.a. modification of the *WRAT* scored slightly higher than children who took the traditional form, but this difference was not significant.

Briggs (36) compared the effect of a programed linguistically based graphemic option reading approach with an eclectic approach on the achievement of rural disadvantaged boys and girls in grades 1 and 2 in Northern Florida. Subjects were randomly selected from 5 classrooms, stratified according to sex and race, and randomly assigned to treatment groups. There were 29 grade 1 and 39 grade 2 pupils in the experimental, linguistic program. For one hour each school day for a 3-month period, experimental subjects received instruction with the Sound Reading Program, a programed, linguistically based reading approach offering a largely self instructional program for teaching decoding and processing skills. The control group youngsters continued in their regular eclectic instructional program. All subjects were administered the Gilmore Oral, Form C, as a pretest. After 3 months, subjects were post tested with an alternate form of the Gilmore and 2 post experimental instruments (Sound Reading Test: Vocabulary and Sound Reading Test: Graphemic Options), assessing words formally presented in the Sound Reading Program. Data from the general and material-specific tests were analyzed separately, as were data from first and second graders. Analysis of covariance was utilized as the statistical technique to compare gains on the Gilmore with the pretest covaried. An analysis of variance was used to test for significant differences between levels of each of the 3 factors. At grade 1 significant differences ($p<.05$) were found on the 2 Sound Reading Tests between black and white pupils. Pretest scores on the Gilmore indicated that these differences existed prior to treatment and may not be a function of instruction. Grade 2 black students assigned to the experimental group made significantly higher accuracy scores on the Gilmore than did white students; whereas in the control group the reverse was true. Treatment effects for grade 2 were apparent on

the comprehension section of the Gilmore Oral and the Sound Reading Test: Vocabulary. No significant difference was apparent in the experimental group for boys or girls.

Five different methods for language arts instruction were compared by Callaway, McDaniel, and Mason (46). Three of the methods were devised to coordinate oral and written language activities with basal reading instruction; 2 methods did not involve co-ordinated instruction in the language arts. Thirty first grade teachers in one Georgia county were randomly assigned so that 6 taught each of the 5 methods. Instruction was restricted to an average of 15 minutes a day in each method. Scores from 598 first grade children on the *Metropolitan Reading Readiness Test*, the *California Test of Mental Maturity*, and the *California Achievement Test (CAT)* were used to compare treatment effects. Analysis of covariance was used for comparing treatment groups with the readiness raw scores covaried. The *Duncan Multiple Range Test* was applied to determine whether differences between adjusted mean scores were significant at the .05 level. Clearest results were related to spelling achievement with supplemental instruction in composition (developing stories related to basal reading content) the most successful treatment. Conversely, directly teaching spelling words not necessarily related to reading or to composition yielded significantly lower spelling scores. Writing original stories also appeared to significantly influence reading vocabulary scores. Groups which did better in reading comprehension had either been taught to spell the basal reader vocabulary or wrote original compositions unrelated to basal content. Children taught to spell an unrelated list of words scored lowest on the reading comprehension subtest. The mechanics of language (English subtest scores from the *CAT*) were significantly higher for the 3 groups whose supplementary instruction was related to or based upon the words and/or stories from the basal readers. Implications from the achievement differences among the instructional groups lent support for a coordinated instructional program in the language arts.

One hundred fifty-two first grade students in 5 elementary schools comprised the sample for a study by Hedges and Hardin (137). The researchers measured the effect of a developmental perceptual-motor program on the academic achievement of these first graders, when academic achievement was defined as performance on the subtests of the *Stanford Achievement Test (SAT)*. The students within each of 9 classes were randomly assigned to

either the experimental or control group. For a period of 21 weeks, teachers of the experimental group used the prescribed materials of the perceptual-motor program, Physiology of Readiness, exactly as specified by the manual for 20 minutes each day. Students in the control group spent classroom time as they typically would. To eliminate the teacher as a variable, each of the 9 teachers worked with both experimental and control groups. During the 20-minute period when teachers worked with the experimental groups, another teacher supervised control children. Post testing was with an alternate form of the *SAT*. In 3 of the 4 subtests, the scores of the experimental group were lower although no differences were statistically significant. Analysis of covariance was used to determine whether there were differences in post tests after taking initial difference in IQ and pretest scores into account. Again, no differences were significant at the .05 level. This trend continued to be apparent when differences in experimental and control groups within each class were examined, leading the researchers to conclude that not only did the materials not result in significant mean gains in achievement, but rather a slightly deleterious effect was evident in the majority of mean gain comparisons made.

Shapiro and Shapiro (301) studied the effect of i.t.a. and TO on children's original compositions. At grade 1 level, 130 i.t.a. and 163 TO children were included in the study; at grade 2 level, 155 of 391 subjects had used i.t.a. through the end of grade 1. Two written assignments were given, one containing a picture along with verbal directions and one with a verbal stimulus only. Analyses were done on the length of the composition; the number of difficult words used as defined by non-appeaance on the Stone Revision of the Dale List of 769 Easy Words; and a rating analysis based on content and overall communication. At both grade levels, i.t.a. children wrote significantly longer compostions than did TO children. At grade 2 level, however, the size of the difference in number of words appeared to be dependent on the composition topic and/or the stimulus mode. The i.t.a. children used a statistically significant (.05 level) greater proportion of difficult words than did TO pupils. For the content part of the rating analysis, assessments of originality, use of rhetorical devices, and evidence of emotion and involvement were undertaken. Overall communication was assessed on a 5-point scale covering general proficiency. Raters were 3 grade 1 teachers for first grade work and 3 grade 2 teachers for second grade work. Compositions were typed prior to rating with syntax left intact but spelling

corrected. Inter-rater reliabilities for the content and communication scales were .74 and .82 respectively for grade 1 teachers and .73 and .84 for grade 2 teachers. Grade 1 i.t.a. groups were superior to TO groups on all dimensions with statistical significance noted on everything except the Emotion Scale. At grade 2 level, statistically significant differences were found favoring the i.t.a. group on 3 of the 5 dimensions for one composition and on 4 of the 5 dimensions for the second composition.

Hislop and King (142) reported on the ability of first, second, and third grade pupils to apply 18 phonic generalizations to nonsense words presented in lists and in sentences. The 90 subjects were individually tested, and records were kept of expected responses, miscues, and omissions for both the word list and the sentence presentation. In addition, after an expected response was given, children were asked how they had figured the word out. An analysis of the basal readers being used by the subjects was also done and a notation made beside each generalization that a child applied appropriately in terms of whether it had been applied before or after it had been taught in the series. Data were analyzed by means of a 2-way analysis of variance using expected responses, miscues, and omissions as the dependent variables. Sex, year in school, or interaction between the 2 were also analyzed. Significant improvement in expected responses in subsequent years in school was noted and generalizations were applied with increasing efficiency from year to year. For years in school, it was found that significant differences (.05 level) occurred between all variables except omissions on both types of presentations between grades 2 and 3 and miscues on words in sentences between grades 2 and 3. No significant sex differences were found in applying phonic generalizations. The proportion of children giving the expected responses increased after introduction on all generalizations except 2.

Knight (181) attempted to evaluate the longitudinal effects of 3 oral language treatment techniques on the reading achievement of second and third grade Spanish-speaking pupils followed through the third year of a project. The 3 treatments compared were Oral-Aural English (OAE), Oral-Aural Spanish (OAS), and Non-Oral-Aural (NOA). The sample included 640 third grade students and 761 second graders (almost exclusively Spanish speaking) who had received the same treatment, by respective treatment, for 3 years and 2 years. Each group daily received two 30-minute periods of instruction over 140 days. Children in OAE group were given intensive

instruction in basic patterns of English, while OAS children were given intensive instruction in basic patterns of Spanish. Both groups used science as the content vehicle and differed only in the language of instruction. Children in the NOA group were given science instruction according to the accompanying manual, but received no intensive language instruction. Full pretests included the *Culture Fair Intelligence Test* of the Institute for Personality and Ability Testing *(IPAT)*; the *Metropolitan Achievement Test (MAT)*, Primary Level; the *Inter-American English Test (IAE)*, Primary Level; and the *Inter-American Spanish Test (IAS)*, Primary Level. From the pool of available subjects, 30 were randomly selected from one of the treatment groups. They were matched on the basis of pretest score with children in the other treatment groups. The 3 tests (subtests and total test) administered in the spring were the *IPAT*, *MAT*, and *IAE*, all of which served as the dependent variables for use in measuring reading achievement. A 2-factor analysis of variance was conducted to obtain *F* ratios and tests of significance for treatment main effect, pretest main effect, and interaction. Findings failed to support the OAS treatment as an effective tool for improving reading achievement for the population under study. Nor did the findings provide a basis for firm conclusions as to the relative effectiveness of the NOA and OAE treatments. However, the pattern of findings appeared to indicate that the degree of experience which teachers had with the OAE treatment may have affected the results.

Putnam and Youtz (266) explored the relative effectiveness of a structured reading program (Structural Reading Series), as compared with a basal program (Winston Basic Readers) for urban disadvantaged children in beginning reading and in initial spelling and writing skills. Eighty-one matched pairs of black and English-speaking Puerto Rican children were assigned to 3 experimental and 3 control classes. Matching was done on the basis of Lee Clark Reading Readiness scores, kindergarten teachers' evaluations, intact families, and sex. All control classes were taught with the basal program; all experimental classes received instruction in the structured reading program. Because of high attrition rate, final data analysis was possible for only 36 matched pairs. Groups were compared for significant differences in reading, spelling, and writing achievement at the end of grades 1 and 2. Data analyses were made for the total group and for the 12 pairs highest and lowest in reading readiness. At the end of grade 1, the control group was significantly

superior in both vocabulary and comprehension as measured by the *Gates-MacGinitie Reading Tests*. While the pattern remained evident at the end of grade 2, no longer was the difference significant. The pattern was reversed on an informal reading achievement test based upon the Structural Reading Series given at the end of grade 1. At the end of grade 2, the basal program was significantly more effective for the high control subgroup in both vocabulary and comprehension as measured on the Gates-MacGinitie. Further results indicated that the structured program was significantly more effective for the total group and the low subgroup on an experimental spelling test of phonetic words. It was also significantly more effective for the low subgroup on an experimental composite spelling test. The structured program was significantly more effective for the total group and both high and low subgroups as measured by the number of words written in response to picture stimuli and and for the total group and high subgroup in number of sentences written.

Grice and Wolfe (117) studied the effects of peer correction of reading worksheets on increase in reading skill as measured by Primary R Reading Profiles, Level 1. Experimental and control groups were each composed of 12 first graders from a suburban elementary school matched on variables of reading ability, Metropolitan Test scores, and sex. For purposes of the experiment, the children were designated as either high or low ability levels. For a 3-week period, the teacher continued to correct and return the reading worksheets of the control group, while the experimental group students corrected papers for one another. The Primary Reading Profiles, Level I Test was given at the conclusion of the treatment. Results of t tests between means indicated significant differences ($p<.10$; $p<.05$) between experimental and control groups on reading test scores for word recognition and word attack skills. The groups did not differ significantly in reading comprehension. When the treatment effects were compared between high and low ability groups, the low ability students appeared to be more affected by the treatment of peer correction of school work. No significant differences were apparent between high ability children in either group.

A diagnostic test for 2 major letter-sound patterns was developed by Venezky and Johnson (348) and tried out on 73 primary school children enrolled in public school in southern Wisconsin. The approximately equal groups of first, second, and third grade children had been taught in first grade with either a phonics program or with a tri-basal approach using heavy supplementary phonics instruc-

tion. All subjects were tested individually on letter-sound translation ability at 6-week intervals; during the last month of school all subjects were tested on vocabulary and comprehension, as measured by the *Gates-MacGinitie Reading Test*. Each letter-sound test included 5 synthetic words illustrating each of 4 letter-sound generalizations: c→[k], c→[s], a→[æ], and a →[e]. Synthetic words were selected randomly for each test from a word pool constructed by using spelling patterns found in English words, but which had no plausible pronunciation recognizable as a real English word. Children within each grade were assigned to one of 3 reading-ability groups (high, middle, low) according to scores on the Gates-MacGinitie comprehension test. A 3x3 analysis of variance was performed for each of the last 3 test periods with repeated measures on the last period. The long and short pronunciations of *a* and the [k] pronunciation of *c* were learned to a high degree of accuracy. These showed no significant differences across grade levels, but they did differ significantly across ability groups. For c→[s], however, learning was extremely low at all grade levels and reached only 45 per cent correct by the end of grade 3. Initial c→[s] was learned more slowly than medial c→[s], indicating an interaction between letter pattern and word position. The authors attributed the failure to acquire the c→[s] pattern, especially in initial positions within words, to the failure of most beginning reading texts to include a sufficient sampling of words beginning with *c* before *e*, *i*, or *y*.

V-6 Teaching reading—grades 4 to 8

Nalven and Auguste (236) investigated the long range effect of i.t.a. and TO instruction in grade 1 on creative writing skill in grade 4. A total of 88 children enrolled in a middle-class, suburban school system were followed up into fourth grade. Both subsamples were composed of 44 children (Male=22; Female=22) matched for Lorge-Thorndike IQ scores and *Metropolitan Achievement Test (MAT)* scores. Raw data consisted of 3 samples of creative writing collected from each subject. Each story was independently rated by 3 primary teachers as to whether it showed more, less, or an average amount of creativity for a fourth grader. Each child's total creativity score was the sum of the 3 independent ratings for each of his 3 stories. Analysis by means of a multiple regression approach indicated that there were no significant differences in total creativity

scores between the i.t.a. and TO subsamples. IQ and *MAT* scores were significantly related to total creativity scores regardless of i.t.a. or TO training.

Zorn (367) described the development of a junior high school level science curriculum designed to emphasize the improvement of reading skills. Thirty eighth-grade students at lowest reading levels were selected by English and reading teachers during the 1970-71 school year on the basis of the reading subtest scores on the *Iowa Test of Basic Skills*. Twelve periods per week were utilized, including 6 periods of science, 4 periods of English, and 2 of developmental reading. Tests of comprehension were developed, based on the students' science experience stories. These stories were teacher-recorded accounts of student dictation following experiments, demonstrations, and observations; the stories were substituted for textbooks. The tests also included science vocabulary recognition. Limitations of the initial testing design prohibited a complete assessment of reading skill improvement, yet data from unnamed standardized tests indicated growth of at least one year for most of the students remaining for the full year. Teachers and students assessed the program as "full," providing more opportunity for reading skill progress and individualized instruction than the regular departmentalized approach. Growth was reported in basic reading skills, self-image, and attitude, as well as the basic science skills (no data presented).

Bruland (40) compared the information gain of 117 children in selected fifth grade classes when orally presented 20 passages at 2 rates of speed (normal and compressed) and with 2 modes of input, listening, and simultaneous listening and reading. In addition, Bruland compared information gain under the 4 experimental conditions for each of 3 IQ levels and explored the influence of training on standardized test results. Results of the *Peabody Picture Vocabulary Test*, Form A, provided data for forming a high, an average, and a low ability group, with one-third of the subjects within each group. The subjects were randomly assigned to 4 equal-size treatment conditions: listening only at normal rate; reading and listening at normal rate; listening only at compressed rate; and reading plus listening at compressed rate. Passages were 1,400 to 2,100 words in length and ranged in readability level on the Dale-Chall from 4.6 to 7.0. Experimenter-constructed tests over content information were administered at pre- and post treatment, daily, and delayed intervals. The following tests were also administered: The Gates-MacGinitie, Survey D (alternate forms for pre- and post assessment),

and the *Sequential Tests of Educational Progress*: Listening (*STEP*) (alternate forms for pre- and post tests). A 4-way analysis of variance with a factorial design for repeated measures was employed. Planned comparisons and Sheffe *post hoc* comparisons were also used. Effects of daily instruction favored the reading-listening group. The effects of treatment on performance from high to low appeared to be reading-listening/compressed reading-listening/normal; listening/compressed; and listening/normal. Findings held against inspection by ability levels for the high and average groups. Effects of the treatment for the low-ability group indicated clear advantage for the reading-listening mode, but for normal rather than compressed rate. Across the 20 daily tests of comprehension, there was significant difference ($p. > .01$) between the reading-listening mode and listening only for the entire treatment period. Compressed rate was slightly superior to normal rate only in performance on the second half (last 10 days) of the daily treatment tests. Again, on daily performance tests for low ability groups, normal rate and the reading-listening mode produced superior results. For average and high ability groups, high to low daily performance favored the reading-listening mode and compressed rate. Differences in performance in silent reading, as measured by the Gates-MacGinitie, indicated significant difference only between high and low ability levels. Rate and mode made no statistically significant effect; there were statistically significant raw score changes over all abilities and all treatments. Results of the *STEP*: Listening Test (pre- and post test analysis) showed differences only between high and low ability groups. The researchers concluded because of raw score losses on the Listening Test that the treatments had no measurable effect on listening skills for the whole sample or any subgroup.

Grant (116) examined the hypothesis that relevant curriculum materials positively affect the self concept, achievement, and school attendance of black students. The sample consisted of 998 black students enrolled in 10 randomly selected innercity schools in a large urban school system. From these 10 schools, 39 heterogeneously grouped classrooms participated in the 4-month study — 16 third grades and 23 sixth grades. Of these, 8 third grade classes and 12 sixth grade classes were assigned to experimental treatment, while the remaining classes served as control. The experimental subjects used the SRA *We Are Black* laboratory material. Tests used to assess variables were *The How Do I Feel About Myself*

Inventory, the *Metropolitan Reading Test*, and the Attendance Form. Means were obtained from each of the 39 classrooms and an analysis of variance was computed. The findings suggested positive statistically significant ($p<.05$) differences in the achievement and attendance of students in the experimental group. There were, however, no statistically significant differences in the self concept measures of students in either the experimental or control groups.

Koziey and Brauer (183) investigated the effects of mental practice in learning basic rapid reading skills in order to improve overall reading performance. Eighty-five grade 8 boys and girls attending a Canadian junior high school were chosen through a drawing, and were randomly assigned to one of 5 equal-size treatment groups. In the final sample, 76 of the original 85 pupils had been both pre- and post tested with alternate forms of the *Nelson-Denny Reading Test*, Revised Edition. Treatment groups included mental practice rehearsal of the specified skill in the imagination with eyes closed ($N=14$); physical practice or actual specific practice of the skill ($N=15$); mental plus physical practice ($N=14$); using the hand as a pacer ($N=16$); and no practice ($N=17$). Groups participated in 6 sessions, each 45 minutes long, twice weekly for a 3-week period. Three drills were prescribed and each treatment method practiced each drill twice in 4 practice sessions, utilizing its own prescribed technique. Analysis of variance was performed on the post test data to determine whether there were significant differences after treatment. Post test means for Vocabulary showed significant differences in favor of 3 of the experimental groups (hand as pacer, physical practice, and mental plus physical practice) when compared with the no-practice group. There was also a significant difference on post test means for Reading Rate ($p<.05$) favoring the mental practice, physical practice and mental plus physical practice groups when compared with the other groups. No significant differences were found between means in any group comparison for Vocabulary and Reading Rate. When compared with the no practice control group, no significant differences were found for comprehension scores.

V-7 Teaching reading—high school

Williams and Stevens (360) sought to determine the effectiveness of teaching methods in the skills of summarizing the main idea and finding the topic sentence. A total of 913 students repre-

senting a random selection from rural and urban elementary (N=382) and secondary (N=531) schools comprised the sample. Students were given exercises in identifying topic sentences and writing appropriate titles for suitably graded workbook paragraphs. Topic sentences appeared at the beginning, middle, and end of the chosen paragraphs. Elementary students were able to determine approximately 40 per cent of the topic sentences and 50 per cent of the acceptable titles with little difference between the correct responses of boys and girls. However, when the topic sentence was stated in positions other than the first sentence, elementary students could identify it only 30 per cent of the time. At the secondary level, students were able to determine approximately 57 per cent of the topic sentences and 65 per cent of the titles. Girls were better able to identify main ideas. Paragraphs in which the topic sentence appeared in the middle seemed to be most difficult for the secondary students.

A summer reading program for junior and senior high school students utilizing a point reinforcement system administered by 3 teachers and 7 additional staff members was reported by Sinatra (307). Nineteen white and 17 black students from grades 8 through 10 were assigned to one of 5 reading groups based upon placement testing with the *Word Opposites Test*, Form A, of the *Botel Reading Inventory*, the *Science Research Associates Reading for Understanding Placement Test* and the *Reading Efficiency Check* (Educational Development Laboratory) at the appropriate level. As a result, 5 reading levels were identified and 5 groups were formed, composed of 4 to 8 students who rotated each half hour through 5 periods of reading instruction. Teachers dispensed points individually to students for successful reading task performance, attendance, and promptness. During designated times, students could exchange their points for concrete rewards and privileges. For the 21 days of instruction, 20 students attended an average of 19.2 days and were present for post testing. Eleven students (all black) did not complete the program and averaged only 5.7 days attendance. The 20 students who completed the program showed no relative improvement on an alternate form of the *Botel Word Opposites Test*. However, they had attained an average grade of 6.3 in the Reading for Understanding skill kit as compared with their beginning survey average of 4.8. According to the Educational Developmental Laboratories materials, the post tested group showed an average of 1.4 years growth in reading level of 22 words per minute

rate gain, and 6 per cent comprehension gain. Results indicated that while the majority of students appeared to work diligently for point accumulation, reinforcement techniques were not enticing enough to keep 11 students in the program who needed additional help.

V-8 Teaching reading—college and adult

Whetstone and Coulter (356) evaluated the effectiveness of 9 methods of applying time pressures as part of the instructional process in a reading program for 235 community college freshmen. Nine experimental groups were composed of 25 to 29 subjects; the control group contained 40 additional students. The second year follow-up test was based on 196 of the original 235 experimental subjects. Experimental group treatments were varied in procedures applying time pressure, but were held constant in instructor, accompanying workbook, lectures presented, recording of progress, and previewing of materials. The following treatments were employed: Group 1 used the EDL tachistoscope; Group 2 used the SRA Pacer; Group 3 utilized the Psychotechnics Tachometer Projector; Group 4 used the EDL Junior Controlled Reader; and Group 5 used the EDL Skimmer-Scanner. Group 6, Teacher-Timed, was given time signals by the instructor; Group 7, Time-No-Time, was given time signals by the teacher part of the time and read without time signals part of the time; in Group 8, Self-Timed, students were asked to time themselves; Group 9, Not-Timed, was not permitted to use a timing device. No significant differences were found among the 9 experimental and one control group on 11 pretests consisting of 5 American College Test scores, high school grade point average, and 5 reading subtests. Seven forms of the Diagnostic Reading Test were administered at 4-week intervals throughout the 16-week course and at the end of the first and second semesters after the course. Variables used to evaluate the experimental reading procedures were: reading speed, comprehension, index (calculated by multiplying wpm by per cent of comprehension), vocabulary, vocabulary plus comprehension, rate of improvement, and retention of results. Significant mean score improvement was evidenced on all 5 reading tests administered during the 4-week evaluation periods, although decline was significant at both one and 2 semesters after the end of the course. Final mean scores were all better than pretest scores. Total experimental group achievement was significantly better than that of the control pre- and post test scores at each evaluation period. Significant differences were apparent in words per minute in the different groups by

the sixteenth week of the study. Mean index score more than doubled during the class and decreased slightly after the class ended. The Control Reader, Skimmer-Scanner, and Teacher-Timed groups showed the greatest and most stable gains.

Phillips (260) investigated the relative effectiveness of 3 approaches to the teaching of reading and study skills to disadvantaged black college students. Specifically, the study attempted to determine the extent to which reading ability, study habits and attitudes, and grade point average were modified by the varied approaches. The sample consisted of 102 freshmen (46 male; 56 female) enrolled in 4 sections of the Reading and Study Skills course at North Carolina Central University during the second semester of the 1967-68 academic year. Four classes were randomly selected from a total of 14 reading sections. An instructional approach was randomly assigned to each of the 3 groups, while the fourth served as a control. For a total of 23 sessions, a group of 27 subjects was taught by a Teacher Guided Approach; a second group (25 subjects) was taught by an Individualized Approach, and a third group (27 subjects) was taught by an Audio-Visual Approach. The fourth group of 23 subjects, serving as the control, received no reading and study skills instruction. Before the treatment, and for post testing, all subjects were tested with the *Davis Reading Test*, the *Brown-Holtzman Survey of Study Habits and Attitudes (SSHA)*, and the *Piefer Reading Attitude Inventory*. In addition, grade point averages for the first and second semesters were computed for each student, with grades of 71 students in English, biology, and social studies used in a correlational analysis. Analysis of covariance for a 2x3x4 factorial design was employed using sex; *SAT*-Verbal scores separated into high, medium, and low scoring group; and treatment effects. No significant differences among treatment groups and control group were indicated on the Level of Comprehension and Speed of Comprehension subtests of the Davis, the post test of the Piefer, or post treatment grade point averages, when each of these measures was covaried for the corresponding pretest of pretreatment score. The Individualized Approach group showed gains on the total *SSHA* score, while the Teacher-Guided and Audio-Visual group both showed losses. Although all approaches showed some gain in grade point averages, the Teacher-Guided approach group made the largest gain and the control group, the smallest.

Swalm and Cox (330) described and evaluated a reading program developed around relevant content, needed skill development,

and the needs and interests of 56 special admit students enrolled in reading improvement courses at one university. Pre- and post test results of the comprehension section of the *Nelson-Denny Reading Test* were compared. The results were contrasted to a theoretical concept of an expected growth curve, rather than with a control group. Specifically, the assumption was made that the normal amount of growth expected with developmental reading programs is one year's growth for every semester of concentrated work in reading. One year was subtracted from each student's gain score and the *t* test for corrected means was then used to evaluate whether the program resulted in better than expected growth. Results indicated that students in the slowest strand of the program improved an average of over 2 and one-half years and those in the advanced strand improved over 3 years. Both increases were statistically significant. Additional data analyses showed that the majority of the subjects scored below the ninth grade level on the pretest, while post test results indicated performance at or above the tenth grade level for the majority of students. Further, 31 per cent of the students scored on the post measure at the level of entering college freshmen, while no subjects reached that category on the premeasure.

Whittaker (357) attempted to determine an effective method for teaching reading to college students of disadvantaged backgrounds. Her subjects (Male=163; Female=169) were arbitrarily divided into 2 treatment groups: textbook-oriented or machine-oriented approaches. Two classes were assigned to each method for each of 3 semesters with one group in each treatment recording pretest scores on the *Nelson-Denny Reading Test* between 7.0 to 9.0 and the other, 9.1 to 12.9. Instruction in reading took place one hour twice a week on alternate days for 18 weeks each semester. An alternate form of the Nelson-Denny was used to measure gain in rate, vocabulary, and comprehension. No significant differences were reported between groups on either pre- or post test data. Each group recorded an average growth of 2 months. Basing her judgment of potential college success upon achievement of a twelfth grade reading level, the author reported that only a small percentage (17 per cent) of the sample had reached this indicative level. The author concluded that regular class attendance appeared to make a difference and that students from disadvantaged backgrounds need extended teaching of reading and study skills, although no data are cited in support of these conclusions.

The differential effectiveness of a traditionally oriented college reading improvement program was assessed for 2 groups of students by Zaccaria, Creaser, Jacobs, and Carsello (365). One group consisted of 118 regular students enrolling voluntarily in the noncredit course, while the second group was composed of 59 disadvantaged freshmen from innercity high schools who had been selected to participate in a special advisement program. All students received small group instruction in vocabulary, comprehension and speed of reading through use of teaching aids, group discussion, and individualized instruction. Alternate forms of the *Nelson-Denny Reading Test* were given as pre- and post test measures. Significant differences were found (.001) in pretest mean scores for the 2 groups on both the Nelson Denny and on *American College Testing Program (ACT)* scores. Raw score data were used in the analysis of reading scores with improvement being determined by the difference in pretest and post test performance. The regular group improved significantly (.01 level) on all 4 indices of reading proficiency, while significant gains were found for the disadvantaged group in all areas except comprehension. The regular group made significantly greater gains than the disadvantaged group in comprehension (.05), rate (.05), and total score (.001). The 2 groups did not differ significantly in vocabulary improvement. In both groups, significant positive coefficients of correlation were found between *ACT* composite scores and comprehension gains ($r=.34$ and .37, respectively) and between *ACT* and total reading gain ($r=.19$ and .27, respectively). The correlations between reading gain and attendance were not significant for either group.

Zaritsky (366) used contingency management and precision teaching to accelerate the amount of homework handed in by 18 urban, disadvantaged college students at Lehman College in the Bronx, New York. Eight males and 10 females ranging in ages from 18 to 23 who were enrolled in 2 reading study skills classes were asked to keep records of completed class homework assignments. Students were told that 2 midterms would be given (in effect, there was only one): an "easy" one for students who had completed all homework, and a "difficult" midterm for all others. This arrangement was no longer present following the midterm, although students were still asked to hand in assignments. Zaritsky found a significant difference ($p<.01$) between percentage of homework assignments handed in before and after the midterm. Even for those students who had conscientiously completed assignments prior to

the midterm and had therefore taken the "easy" exam, percentage of completion dropped significantly ($p<.016$) after the exam. For students taking the "difficult" exam, no significant difference was found between pre- and post midterm behavior. The Mann Whitney *T* test for independent data revealed significant differences in scores on the midterm ($p<.01$) in favor of the students who thought they were taking the easy exam. A non-significant negative Spearman Rank Order Correlation ($r=-.11$) was found between scores for the total group on the *Nelson-Denny Reading Achievement Test* and the midterm examination. Negative correlation was also found between test performance on the Nelson-Denny and on the midterm for students taking the easy exam. Yet a positive correlation of .80 was found between the standardized and midterm scores for the 8 students taking the difficult exam, leading the researcher to conclude that the midterm did indeed isolate on the variable it was designed to test: class and homework rather than basic reading ability.

Reading rate and reading comprehension scores of 2 groups of college students enrolled in a reading improvement program were studied by Rankin and Kehle (274) before and after training. The investigation which was a reanalysis of data from an earlier study used students who were selected on the basis of having scored below the thirty-third percentile on the *Cooperative English Tests*: Reading Comprehension. Students were identified as having either conventional or negative internal reading flexibility. Internal reading flexibility was assessed by alternate forms of the Story Comprehension Subtest of the *Diagnostic Reading Tests*: Survey Section (*DRT*). Subjects were asked to underline the word they were reading on the test at 15-second intervals. Following the reading of the article, subjects took a 20-item test based on the passage. Individual flexibility coefficients were established by computing a Pearson coefficient of correlation between the distribution of reading rates for successive 100-word segments and the distribution of cloze readability scores for the same segments. Before training, 193 subjects showed conventional flexibility, and 62 students showed negative flexibility. However, after training, the figures were 228 and 27 respectively. Although a significant difference in flexibility was found between the 2 groups, no relationship was noted for comprehension or rate prior to training. After training, however, a significant difference in mean rates between the 2 groups was found.

The conventionally flexible group read significantly slower than the negative group.

Sweiger (331) presented the results of a mail survey of reading programs at 288 junior colleges. Tabulated results of a 34-item questionnaire seemed to indicate that the instructional materials employed determined what was taught in the reading courses. Diversities in offered courses appeared to be a function of size, locality, budgeting, and philosophy of the school, as well as prevailing attitude toward remedial instruction. Particular emphasis appeared to be placed upon basic reading skills, including vocabulary and comprehension, as well as the study skills. Generally, no college credit was offered for the reading courses. Regardless of previous training, the large majority of faculty members teaching reading had done some diagnostic testing.

Patterson (255) described and reported preliminary results for an experimental pre-freshman program for management and engineering majors at General Motors Institute. Fifty-five students who did not meet entrance requirements for the 1971 freshman class were assigned to courses in communication skills, as well as math and the sciences. Entry reading level was measured with the *Diagnostic Reading Test (DRT)*, *California Reading Test* and the *Brown-Holtzman Survey of Study Habits and Attitudes*. At the end of the first 6 weeks, an alternate form of the *DRT* was administered and results reported in terms of gains in rate, comprehension, and mean index. The author reported a significant difference ($p<.01$) in rate of reading between pre- and post testing, although no specific instructional emphasis had been accorded reading speed. Further testing was to be done at the semester's completion.

V-9 Teaching materials

Harris and Jacobson (132) developed a vocabulary list based on 127 books from 14 textbook series used with elementary school children. The books included 6 basal reading series and 2 series from each of 4 content areas. Three sets of lists were constituted. The General Vocabulary list consisted of 2 components, a Core List and an Additional List. These 2 were arranged by grade levels and alphabetically within each level. The Core List was comprised of words found in 3 or more of the basal series, while the Additional List included words found in at least 4 textbook series, including basal readers. A second set, the Technical Vocabularies, included

words appearing in both series of a given content field and also those judged by the authors to have a technical meaning in that content field. Each content area list in the Technical Vocabularies was arranged alphabetically. The third set, the Total Alphabetical List, consisted of every word appearing on any of the General or Technical lists.

Johnson and Barrett (161) analyzed a sample of 10 commercially published beginning reading programs to determine frequency of occurrence of the 306 words on Johnson's Basic Vocabulary for Beginning Reading. Over 2-thirds of the 306 words are contained in either the first or second grade books of 9 out of 10 of the series checked. Nearly 90 per cent of the words are included in over half of the series, and each of the 306 words is found in at least one series. Although the basic vocabulary was derived from sources other than basal readers, the researchers reported that 28 of its words appeared in the first grade level books of all 10 series and that 134 words occurred in all 10 series at either the first or second grade level. Conversely, 26 words occurred in fewer than half of the series at either the first or second grade level.

California state-adopted reading, language arts, and spelling texts were analyzed by Barnes and Barnes (15) in order to determine the frequency of appearance of words on the Dolch Basic Sight Vocabulary of 220 words. The percentage of Dolch words in each of 32 texts representing English, spelling, and reading areas was calculated for each primary grade level. Frequency counts enabled the researchers to rank order Dolch words by percentage of use as compared with total running words. In addition, the primary texts were examined for consistency among grade levels at which the Dolch words were introduced. Finally, the researchers calculated the frequency with which primary level pupils were required to write Dolch words directly in spelling and English texts. Results indicated the Dolch words comprised up to 61.78 per cent of the running words in the examined texts, with 65.37 per cent in first grade texts, 60.43 per cent in second grade texts, and 59.56 per cent in third grade texts. Most of the Dolch words were introduced by the end of second grade in the spelling and English series, but the reading series introduced most of the words by the end of first grade. As an outgrowth of the investigation, the Barnes' Revised Dolch List of 193 Words was presented.

Cline (58) compared the readability levels of 17 community college textbooks with the reading levels of 279 freshman commun-

ity college students in Missouri. Scores from the *Nelson-Denny Reading Test*, Revised Edition, were used to describe grade-equivalent reading levels of students. The Dale-Chall Readability Formula was employed to determine the readability of the texts. Assigned texts in each class were compared with the reading levels of the students enrolled. Results indicated that 52 per cent of the students in the sampled classes had reading levels below that of the assigned textbook. Average reading level of the students was determined to be 12.6. As a result of his findings, Cline provided a series of recommendations, including a review of textbook selection policy at the community college level, the application of appropriately adjusted readability formulas, and provision for use of a variety of media to clarify textbook material.

Groff (121) attempted to determine a) to what extent and with which specific spelling the process of finding little words in bigger words can be used, and b) whether a monosyllabic word will be pronounced in a bigger one as it is when spoken alone. After inspecting the high-frequency words in the New Iowa Spelling Scale, the researcher examined the monosyllabic words in bigger words to determine if they were useful. Criteria for usefulness were defined as 1) the word must maintain its autonomous sound, and 2) the word must not distort the pronunciation of the bigger word when it is given a schwa sound that could be changed to the autonomous sound. There were 5,585 instances in which monosyllabic words were found in bigger words. In 3,622 of the instances—or 65 per cent of the time—the monosyllabic words could be pronounced with their autonomous accents. The researcher also found that this per cent varied with the initial letter of the word, seeming to indicate that finding monosyllabic words in bigger words was a good means of word recognition with high frequency words beginning with such letters as *i, d, r, f, g,* and *u*. Conversely, fewer than 50 per cent of the monosyllabic words beginning with *w* and *t* could be given their autonomous accent.

Groff (119) identified 1,388 monosyllabic words from the New Iowa Spelling Scale and separated them into 6 categories for purposes of analysis. Category A consisted of closed syllables with single vowel letters; Category B, closed syllables with the e marker, as in *pale*; Category C, closed syllables with $\bar{a}$, $\bar{e}$, and $\bar{o}$ sounds spelled with 2-letter vowel clusters; Category D, closed syllables with ow, $\overline{oo}$, $\breve{oo}$, and oi sounds spelled with 2-vowel letter clusters; Category E, closed syllables with "r-colored" vowel sounds spelled in dif-

ferent ways; Category F, open syllables. There were 551 words in Category A of which 86 per cent have regularly spelled vowel sounds and 14 per cent have vowel sounds that are irregularly spelled (*all, child, calf, want*). In Category B, there were 208 words that followed 4 different spelling patterns, whose regularity ranged from 88 per cent to 100 per cent. Category C contained 161 words in 6 spelling patterns with 77 to 98 per cent regularity in their spelling-sound correspondence. For Category D there were 121 words representing 15 different sound patterns. There were 148 words in the 4-colored group, Category E. Of the 19 spelling patterns represented, 10 showed 100 per cent spelling-sound regularity with a range from 50 to 91 per cent regularity among the other patterns. There were 107 open syllable words in Category F with 26 spelling patterns represented. Most of these showed 100 per cent regularity with only 5 spelling patterns having any exceptions. Groff suggests an order for teaching phonics based on these findings.

Basal readers disagree widely on the sequence for teaching the consonant clusters, according to an analysis by Groff (120). Decisions on the instructional sequence for clusters appear not to have taken the following factors into account: the extent to which the readability of words using these clusters was considered, the degree of relative frequency or use of these words in printed matter, the total number of words employing these clusters, or the relative spelling difficulty of consonant-cluster words. One-vowel words that begin with any of 25 consonant clusters were selected from the New Iowa Spelling Scale and categorized by beginning cluster. Because this list of 5,507 words reports the per cent of children in grades 2 through 8 who correctly spelled each of the words, the selected one-syllable words could be ranked in order of difficulty and the median word identified by noting the per cent of fourth grade children who spelled it correctly. The median per cent indicated the relative spelling difficulty of words beginning with a certain consonant cluster. This ranking was compared with a ranking that represented the average number of times one-vowel words that begin with the 25 consonant clusters appear in the Kučera-Francis list of 5,000 most frequently published words. Another ranking indicated the total number of different one-vowel words in the 5,000 most frequently published words that begin with a given cluster; a final ranking dealt with the relative ease of comprehension of the one-syllable words based upon fourth graders' ability to provide synonyms. From analysis of spelling difficulty, frequency of occurrence, occurrence

in different words, or readability, no clear-cut instructional sequence became evident. Nevertheless, Groff judged that clusters appearing above the median rank in all 4 categories could be taught first. Also possible is a summation of rank across categories to yield a numerical basis for a recommended sequence for teaching consonant clusters.

Janz and Smith (154) attempted to determine if a practical difference existed between the reading ability of eighth, ninth, and tenth grade students and the readability levels of their assigned textbooks in English, science, and social studies. A set of standardized tests (not named) were administered to 590 eighth to tenth grade students in 5 schools. Means of the reading scores for each of the 3 grades were computed, and one year was added to each mean to account for practical differences. Readability levels of the texts were obtained through use of the Flesch Readability Formula. Percentages of students reading below and above the levels of the various textbooks were calculated. For the range of grade levels sampled, the 14 social studies books examined were too difficult for from 36 to 93 per cent of the students. The 14 science books were too difficult for from 13 to 100 per cent of the students using them; 11 English books were too difficult for from 2 to 100 per cent of the sample.

Concerned that the readability of required textbooks at a junior college was not consonant with students' reading abilities, Mechlian (214) compared scores on the *Nelson-Denny Reading Test* with results of application of the Dale-Chall Readability Formula to the texts. From data collected by comparing reading level and readability of the texts for 4 social studies and one English class, significant differences for every class were found through use of the z ratio, indicating that the readability level of the texts tends to be significantly higher than the reading levels of the students. In a further sampling, 20 textbooks were analyzed. Eight had a readability score above sixteenth grade level, matching the reading level of fewer than 30 per cent of the students. Implications and recommendations for text adoption and adaptation are provided.

Mollach (229) sought to determine how well community college freshmen comprehended reading materials used in composition classes. An unspecified number of community college freshmen were classified as either standard or remedial, based upon scores on the *New York State Entrance Examination*. Cloze tests were constructed using 250 to 300 words taken from required essays

for the class. Readability ranged from grades 5 through 15 when the SMOG readability formula was applied. Scores were reported against pre-existing criteria for interpreting reading levels with cloze tests. Forty-two per cent of the standard composition and 56 per cent of the remedial students scored at frustration level on the 5 tests ranging in difficulty from grade 6 to 15. At grade 11 level, only 12 per cent of the standard composition students scored at the independent level. For grades 14 and 15, this percentage dropped to zero. When analysis of variance was applied, significant differences ($p<.05$) were reported between standard and remedial groups on 5 of the 6 tests.

Mueller (234) analyzed the levels of thinking fostered by the teachers' guides of basal readers written for average and below-average readers and the congruency of teachers' questioning strategies with these guides. Eight experienced innercity teachers were observed and audiotaped as they taught 3 reading lessons to their fourth grade reading groups for a total of 6 to 9 observations per teacher. Typescripts were prepared both from the audiotapes and from the reading lessons in the teachers' guides. These typescripts were then coded for level of thinking, using a modified version of the Aschner-Gallagher category system. The analyses indicated that only a small percentage of the questions suggested by either of the basal reader guides involved higher level thought processes. Nearly 2-thirds of the questions provided by the basal for below-average readers required cognitive memory or reading verbatim from the text while 37.6 per cent of the questions provided by the teachers' guide of the basal for average readers were at this level. By compiling a random sample of 50 questions from a pool of guidebook questions and comparing this sample with a corresponding sample of teachers' actual verbal performances, congruence between teacher and text was computed and summed in the coded question categories. Results indicated that the majority of questions asked by the teachers in this study required cognitive-memory regardless of the level of the group or the text used. However, teachers seemed as likely to ask a higher level question of their low groups as of their high groups. Postulating that teacher performance deviated from the texts because of variance within reading groups, regression equations were computed to determine whether relationships existed between teacher variance from prescribed questioning and the group's range of ability. However, no such relationship appeared to exist.

V-10 Corrective and remedial instruction

Newman (239) conducted a follow-up study on the effect of first grade reading treatments on children who were likely underachievers. Subjects were 230 children from one of the 27 USOE First Grade Reading Studies. The project had been designed to develop and assess methods and materials especially adapted to low-reading-group pupils. Fifth and sixth grade children included in the later analysis were given the *Iowa Tests of Basic Skills*. Other instruments included were those given in grade 1. Statistical analysis for the longitudinal study included correlational analysis, canonical analysis, multivariate analysis, and covariate analysis. Results indicated that 1) there were no significant differences between treatment groups at first or sixth grade level; 2) first grade reading achievement test scores were found to be significantly strong as a predictor of sixth grade reading achievement scores and more reliable than first grade readiness measures; and 3) the correlational structure of achievement related variables revealed a striking persistence and intensification of the g-type factor, with the emergence of a strongly sex-linked second factor at sixth grade.

A follow-up report on 29 high school students who had received varying amounts of specialized reading help was conducted at the end of their senior year by Fiedler (95). Referral for remediation in the school clinic was geared toward identification of freshman students reading 2 or more levels below expectancy as measured by the *Gates Reading Survey* and the *WAIS (Wechsler Adult Intelligence Scale)*. During the 1966-67 school year, 20 of these remedial students who had been dismissed as remediated were compared for gain in grade point average and English grades. Although there was some question as to the reliability of the evidence, it was found that 65 per cent of all remediated students and 85 per cent of all students in this investigation showed improvements in one or both areas. At the close of the 1970 school year, all 29 students were compared on their responses to reading related questions from an interest inventory given upon entering the clinic program and then again prior to graduation. Twenty-two of the students had received help as freshmen, 2 as sophomores, and 5 as juniors. Categories were formulated for classifying responses so that changes in attitude could be inferred. Results indicated a shift toward more positive or adult attitudes in all questions except those related to reading enjoyment and library use, although 45 per cent of

the respondents did show a more positive attitude toward enjoyment of reading. Overall, a positive gain of 67 per cent on the interest inventory was reported. When the 20 students who had been part of the earlier investigation were compared for gain on the Gates Survey, in grade point average, English grade, and positive change on the interest inventory, analysis revealed that the students changed attitudes toward reading as their skills increased, but had difficulty reflecting this in improved grades. The author cited the resultant attitudinal changes as support for remedial reading programs.

Sullivan (328) investigated the effects of Kephart's perceptual-motor training upon the reading performance of 82 poor readers. Subjects came from a summer clinic population with average and above average intelligence and represented all grade levels from 4 through 12. In addition, she compared the effectiveness of training upon the reading performances of children with binocular fusion difficulties and children with no apparent visual defects. As a screening procedure, pupils were individually tested to determine their reading ability, spelling performance, intellectual and visual functioning, and attitude toward attending the summer reading program. Instruments used were the *Gray Oral Reading* of Paragraphs, the *Sequential Test of Educational Progress*: Reading *(STEP)*, the *Morrison-McCall Spelling Scale*, *WISC*, and the *Keystone Visual Survey Test*. Parent interviews provided information on the child's academic and social adjustment. Due to the wide grade range, pupils were treated at 3 instructional levels: elementary, junior high, and senior high. Experimental and control group subjects were matched on the bases of age, grade, intelligence, and reading achievement. Differences between the means for the predictor variables of age, grade, and IQ were small and not significant. Mean oral reading score for the total experimental group was 18 months below the mean grade level; for the control group it was 15 months below grade level. The vision subgroup was composed of 13 subjects from the experimental group who had poor binocular fusion as measured by the Keystone and 28 students from the same group who had "normal vision." Subjects from the poor fusion and normal vision subgroups did not differ significantly in age, grade, or IQ. All pupils received 2 hours of reading instruction daily. Experimental pupils received 3 types of perceptual-motor training for a half hour daily for 6 weeks: Chalkboard training consisting of 4 tracing exercises, ocular pursuit training, and sensory motor training which included exercises in balance, laterality, and directionality. *T*

tests were applied to gain scores made on both reading comprehension and oral reading. Findings seemed to indicate that perceptual-motor training, as administered in this study, had little or no effect on the reading performances of poor readers. Because the *t* ratio obtained did approach significance, the chi-square technique was used combining the individual probabilities to obtain an aggregate probability. However, this technique failed to statistically support the importance of perceptual-motor training with middle and upper grade children at beginning reading levels. The effect of perceptual-motor training upon the reading comprehension of the total clinic group were negligible; yet the effects on oral reading were close to significant. Subjects with good vision exceeded those with binocular fusion difficulties, but not at a significant rate.

Vandever and Neville (343) focused on the problem of whether tracing cues are as helpful as visual and auditory cues with good and poor decoders at grade 1. Ten subjects were randomly selected from each of 4 schools in April of grade 1. Subjects were given the Word Knowledge subtest of the *Metropolitan Achievement Test (MAT)*, Primary I. Those who scored above the median were placed in the high decoder group, while those scoring below the median were in the low decoder group. The mean score of the low group on the *MAT* was 1.4, and of the high group, 2.1. The mean *WISC* IQ's were 90 and 102 for the low and high groups respectively. Words, written in a contrived alphabet, were presented twice in each condition, and the pupils were to associate the word with the picture. In the visual condition, such visual cues as configuration, distinctive letters, double letters, and tall or descending letters were emphasized. The auditory condition presented letter sounds that were blended into words. Words were spoken softly and traced with a pencil and then with the finger in the tracing condition. Within each school, subjects were assigned to instructional groups of 10, containing both high and low decoders. Subjects were then given a practice session on one day followed by 2 learning-testing sessions per day for the next 3 days. In each session, 2 words were taught under each of the 3 conditions and then tested for in a multiple choice format. High scorers on the *MAT* learned more words than the low *MAT* scorers, and the 2 groups showed different profiles of abilities. There was no significant difference between the mean number of words learned in the 3 conditions for the high group. The low group learned more words both visually and auditorily than by

tracing. No differences were noted for the group between the visual and the auditory condition.

A study conducted by Newman (240) compared the effectiveness of 2 standard methods — perceptual training and phonics training — with a group of 80 students enrolled in learning disabilities classes assigned equally to the 2 training programs. Ages ranged from 8-0 to 12-7. IQ's ranged from 56 to 122, with the mean IQ for each group about 87. Training lasted for approximately 20 school weeks and consisted of daily 30-minute periods of instruction. A total of 12 teachers were involved, 6 assigned to each group. Alternate forms of both the *California Reading Test* and the *Gray Oral Reading Test* were used as pretests and as post tests to measure reading achievement. Although the statistical comparison used was not reported, the author did report a greater increase in reading ability on the Gray Oral for the perceptual training group as compared with the phonics group. Test results did not indicate that the younger the child, the greater the effect of perceptual training on reading achievement. Finally, results supported the hypothesis that the more intelligent the child, the greater the effect of perceptual training on reading achievement.

Belmont, Flegenheimer, and Birch (20) compared the effects of perceptual training and remedial instruction for 16 matched pairs of first graders identified as poor risks for reading instruction. Thirty-two children were selected from a group of 176 white, predominantly lower middle-class children who had completed kindergarten and were beginning first grade. A group of 16 children (reduced through attrition to 14) was placed in the Perceptual Training group and another group, matched for age, sex, and reading readiness score, was placed in the Remedial Reading group. The *New York City Pre-Reading Assessment Test* was used to identify the subjects as the poorest readers. These test results, as well as results from the *Wide Range Achievement Test (WRAT)*, were used to match the reading skills in both groups. Reading ability after instruction (4 half-hour daily sessions per week for 7 months) was measured with the *Metropolitan Achievement Test*, Primary, a readministration of the *WRAT*, the *Gates-MacGinitie Reading Test*, Primary A, and the *Gates-McKillop Reading Diagnostic Test*. Mean reading grade scores were calculated for each group on all but the Gates-McKillop. The latter was used to compare the number and kind of reading errors made by each group. Equivalent gains were made on each of the 4 tests analyzed. Although a difference in type

of reading error was evidenced by the Gates-McKillop, difference was not statistically significant.

Ayres (11) compared the effects of remedial activity designed for the specific sensory integrative dysfunctions of a selected sample of learning disabled children with a control group, matched for degree and type of sensory integrative dysfunction, who received equivalent amounts of academic work. The initial sample was composed of 148 public school children identified by the schools as having learning disorders. A pretest battery of neuromuscular tests, the *Southern California Sensory Integration Tests (SCSIT)*, the *Illinois Test of Psycholinguistic Abilities (ITPA)*, the *Wide Range Achievement Test (WRAT)*, and the *Slosson Oral Reading Test (SORT)* were administered. Based upon inspection of pretest scores, each child's program was established for his particular pattern of sensory integrative dysfunction. Daily remedial treatment extended for 25 to 40 minutes over a period of 5 to 6 months; the control group received a comparable amount of classroom experience. For the purpose of controlling experimental variables, the status of control and experimental groups was reversed during the second year. Of the original sample, 128 were available for post testing on a portion of the pretest battery approximately one year later. In order to select from the referred sample those children who indeed manifested difficulties which the treatment program was designed to affect, factor analysis of scores confirmed the presence of 5 hypothesized syndromes of dysfunction: disorders in 1) postural, ocular and bilateral integration; 2) praxis; 3) functions of the left side of the body; 4) form and space perception; and 5) auditory-language function. Each child was assigned a score for each of the 5 areas indicating degree of dysfunction. Using these 5 scores as criteria, regression equations were generated from the test scores of the total sample and then reapplied to the 128 children who were retested. Arbitrary regression cut-off scores were used as a means for excluding from statistical analysis all subjects whose scores were above the cut-off. Left in the research sample were 31 experimental and 37 control subjects with generalized dysfunction plus 13 experimental and 21 control subjects with auditory language problems, but without significantly low scores on the other syndromes. From this sample, 30 experimental and 12 control pairs were selected. Application of a *t* test for differences between means showed no significant differences on any of the variables prior to treatment. Mean gain of the experimental group with generalized dysfunction exceeded that of its control

group in all instances, but significant differences were achieved only on the *WRAT*: Reading and *WRAT*: total scores. The experimental group with auditory disorders achieved significantly higher scores on the *WRAT*: Reading and *SORT*. Determination of the significance of difference of change scores on the *SCSIT* and *ITPA* was determined through discriminant analysis. The difference in corrected change scores among the 2 experimental and 2 control groups on the auditory-language tests was statistically significant beyond the .01 level. Additional computations demonstrated that each of the experimental groups differed from its respective control group on both sets of variables and that the differences were statistically significant.

Lawrence (190) compared the effects on reading attainment of individual personal counselling and a traditional remedial program. Four matched groups of retarded readers consisting of 8 boys and 4 girls each were identified in typical British village schools. Children were matched on the basis of scores on the *Schonell Word Recognition Test*, the *Sleight Nonverbal Intelligences Test*, and the *Porter and Cattell's Children's Personality Questionnaire (CPQ)*. Group 1 received remedial reading instruction from a special teacher for 6 months. Group 2 received remedial reading plus counselling for 6 months. In Group 3, children received counselling only for 20 minutes each week over the 6 months period. Group 4 pupils acted as a control group. At the end of the 6 months, the Schonell and the *CPQ* were readministered. The counselling group showed a mean gain of .62 in reading age, greater than that of any other group. Group 2 showed a mean gain of .40 while Groups 1 and 2 showed mean gains in reading age of .17 and .16 respectively.

Elenbogen and Simmons (84) identified children at the end of the kindergarten year who showed potential educational, maturational, or neurophysiological problems, and designed a 2-year reading and remediation program to fit their individual needs. As a result of preliminary screening based upon information from cumulative folders, teacher questionnaire, and *Metropolitan Readiness Test* results, 57 children (Male=34; Female=23) ranging in ages from 5-6 to 6-5 were selected for further screening with batteries of tests assessing IQ, Visual Skills, Auditory Skills, Language, Gross Motor Skills, Orientation, and Learned Concepts. An instructional program directed toward remediating deficits, while teaching through modality strengths, permitted the majority of children to remain within the regular classroom. Four reading groups were formed

composed of children with either auditory deficits, visual deficits, no serious deficits, or multiple deficits. The Marianne *Frostig Developmental Test of Visual Perception* was administered to a portion of the sample to further pinpoint specific areas of visual deficiency. Subremediation groups required the specialized services of teachers of speech, physical education, and learning disabilities. Because of attrition rate and the placement of certain children within special classrooms, only 24 children were rescreened at the end of second grade. Results from Word Meaning, Paragraph Meaning, and Spelling subtests of the *Stanford Achievement Test* were compared with the total second grade population. The experimental group was also compared with the total second grade as to attitude toward reading. The data were analyzed using multivariate analysis of variance and covariance. Significant differences were found between pre- and post test performance on visual motor skills ($p<.001$), visual memory ($p<.001$), auditory discrimination ($p<.01$), and auditory memory ($p<.01$). Although regular readers scored higher than the special children ($p<.01$) on all 3 subtests of the *SAT*, all children in the special groups were at grade level or above. Attitude evaluation revealed a greater interest in reading activities for the regular readers, although both groups reacted generally in a positive manner.

An approach to group screening for reading disability in beginning first graders was developed and validated by Hartlage and Lucas (134). Forty-four children (Male=23; Female=21), with a mean age of 6.7 and mean IQ of 107, were initially tested with the 5-section test based on variables of auditory sequencing, visual motor skills, auditory spatial skills, visual sequencing, and combined auditory and spatial skills. Teachers' rankings of children's reading skills and *Wide Range Achievement Test (WRAT)* scores were correlated with each section of the test. Multiple correlations for all sections of the test were computed with both teachers' rankings and *WRAT* measures of reading ability. All subtests except visual-motor skills and auditory space correlated significantly with teacher rankings; all subtests except visual-motor skills correlated at significant levels with *WRAT* reading levels. Correlations between visual sequencing, auditory sequencing, and combined auditory and visual space subtests ranged from .47 to .67 with estimates of reading ability. The multiple regression coefficient for all subtests was .778 with *WRAT* reading levels and .773 with teacher rankings. The group screening procedure was subsequently ad-

ministered to all children beginning first grade in a suburban school system, who were then taught reading by either a linguistic, look-say, or special alphabet approach. In addition the *Metropolitan Readiness Test* scores were obtained at the beginning of grade 1. At the end of first grade, 1,132 children (Male=551; Female=481) were tested for reading skills with the word recognition section of the *WRAT* and ranked within classes for reading skills by the teachers. A one-way analysis of variance was computed for the *Metropolitan Reading Readiness* levels among children taught by each method. Individual and multiple correlations were computed for subtest combinations with reading skills among children taught by each of 3 methods. Separate one-way analyses of variance were computed for each subtest among children divided into upper, middle, and lower thirds of the class on both *WRAT* scores and teacher ranks. All subtest scores correlated at significant ($p<.005$) levels with *WRAT* scores of both sexes taught by the special alphabet approach. No subtests correlated at significant levels with *WRAT* scores of girls taught by the phonetic approach, and only visual sequencing and visual/aural space scores correlated at significant levels ($p<.05$) with scores on the *WRAT* scores for boys taught by the phonics approach. No subtest correlated at significant levels with teacher rankings of reading ability for either boys or girls taught by the phonetic approach. Generally, the best predictors of reading success by either criterion measure, for either sex, and for all teaching methods involved sequencing skills. However, multiple correlations of all subtests with *WRAT* scores reached significant levels with all teaching methods. Largest differences between good and poor readers were found on auditory sequencing and visual sequencing with differences also appearing on letter identification and visual-aural space.

Rampp and Covington (272) used the i.t.a. to teach reading to 10 boys ranging in ages from 8 to 12 who had been classified as exhibiting auditory-perceptual disturbances. In addition, each subject was found to be reading at least 2 years below chronological age level as measured by the *Gray Oral Reading Test* and at least 2 years below reading expectancy as computed with the Bond-Tinker formula. The 10 boys were divided into 3 groups on the basis of age and met 3 hours weekly in after school classes, using commercially produced i.t.a. materials. Pretest and post test raw scores on the Gray Oral for each of the subjects were statistically analyzed using a *t* test for matched samples. A significant difference at the .01 level

of confidence was attained. The authors credited the sound-symbol consistency of i.t.a. as an important factor in producing gain.

Franco (101) described the growth of more than 100 seventh grade students after completion of a summer school program designed to teach them study skills of various content areas. Subjects for the summer program were selected from students in Hillsborough County, Florida, who were recommended by the principals and counselors, then further screened by social workers. Each of the students was described as an average seventh grader eligible for promotion to eighth grade, but achieving one or more years below grade placement. The curriculum was designed for small group instruction for a 6-week period. The thrust was toward the teaching of study skills in English, mathematics, science, and social studies. Pretest and post test raw scores on the *MAT* were used for statistical comparison and mean grade equivalents for normative comparisons. Chi squares were computed on each variable to test normalcy of the pretest and post test distributions. Because no significant differences were found, all distributions were assumed to be normal. To further analyze the data, *t* tests for differences between correlated means were computed. Significant gains at the .01 level were found for each variable tested. Follow-up grade reports are also included.

Attempting to assess the effect of typewriting instruction on the reading achievement of 64 high school sophomores, Fuhr (105) randomly selected 32 males and 32 females who were 2 or more years retarded in reading as measured by the *Metropolitan Achievement Test*, Advanced Reading (*MAT*). The 64 students were randomly assigned to 4 equal-sized groups with equal number of males and females in each. For 20 weeks, 5 days per week, group R received instruction in remedial reading; group T received instruction in beginning typing; group RT was scheduled for instruction in both reading and typing. Group C was the control group, scheduled for neither class. The researcher, a high school English teacher, taught both remedial reading classes; typing classes were also taught by the same teacher. Post testing was with an alternate form of the *MAT*. Reading achievement scores were then examined using the 2x2x2 factorial Analysis of Variance. Findings suggested that teaching typewriter techniques rather than remedial reading resulted in greater increase in reading achievement when (as in this study) remedial reading was taught by a high school English teacher.

From 4 first and 4 second grade classrooms, each of 8 teachers selected a child she believed to be learning disabled. These diagnoses were confirmed by Griffiths, Gillen, and Dankel (118) after administration of the *WISC*, examination of academic achievement, and consultation with the teachers. In addition, the children were tested with the *Wide Range Achievement Test*, Marianne Frostig *Developmental Test of Visual Perception*, *California Mental Maturity Test*, and the *Harris Tests of Lateral Dominance*. The 8 children in the experimental group were paired with a control group on the basis of comparable IQ, sex, grade, and socioeconomic background. Corrective procedures were then employed by the teacher. These procedures involved self-confidence modification, specific material usage, a portable carrel to reduce visual distraction, and individual attention. Remediation began during January, 1971, and children were administered another series of tests at the end of March and in early April to measure the degree of improvement. Although no specific remedial treatment is outlined, children in the experimental group appeared to make substantial improvements on the post tests, including *CMMT*, *WRAT*, and the *SAT*. No correspondingly substantial improvement appeared evident on the Frostig. The researchers cited the demonstrated gains of the experimental group as evidence of effective handling of the learning disabled child in the regular classroom.

V-11 Teaching—testing

Turaids, Wepman, and Morency (340) explored the relationships between age and achievement on the *Perceptual Test Battery* as part of the test's development and standardization procedure. The sample consisted of 1,008 children who were randomly selected from a pool of 5-8 year olds who met the following criteria: intelligence quotient of at least 90, normal vision and hearing, freedom from emotional or organic disability, non-repeaters, and no evident learning problem. Children were individually tested with 4 auditory subscales of the *Perceptual Test* (discrimination, memory for words, memory for sentences and number sequencing), plus 2 visual subscales (form discrimination and form memory). Results indicated no significant differences between sexes on any of the tests, yet all but 2 of the differences between age groupings were significant beyond the .05 level. There was no significant difference between 5 and 6 year olds on the auditory discrimination test, nor between 7 and 8 year olds on the auditory memory span test. Scores on

the various subscales were correlated to determine relationship between auditory and visual perceptual abilities. All of the coefficients of correlations were significant ($p<.001$). Highest correlations were obtained between auditory memory span and auditory sequencing span, indicating that the 2 may be used almost interchangeably. Seemingly, visual tests were more closely related to age than were auditory tests. The researchers concluded that this result may be a function of the nature of the test material itself (in terms of familiarity) rather than the developmental characteristics of auditory and visual discrimination. Profile sheets for each age group were developed in order to plot readiness level and to make decisions for modality preferences.

Rude (290) compared the content of 5 reading readiness batteries with a composite of skills derived from the literature and deemed requisite to reading: grapheme perception, left to right visual scan, understanding of grapheme-phoneme relationships, and phoneme blending. In order to determine not only which specific skills are assessed, but also the evaluation techniques employed, Rude examined the following 5 major tests: the *Metropolitan Readiness Tests*, *Murphy-Durrell Reading Readiness Analysis*, *Clymer-Barrett Prereading Battery*, *Gates-MacGinitie Reading Test*—Readiness Skills, and *Harrison-Stroud Reading Readiness Profiles*. Readily apparent were discrepancies among test content. Of the total 29 skill subtests in the batteries, 17 in some way measured one of the 4 specified prereading skills. The remaining 12 subtests measured abilities other than those the experts advocated.

Attempting to establish the predictive validity of several commonly used measures of reading readiness, Lowell (205) investigated factors of visual discrimination, auditory discrimination, visual memory, knowledge of alphabet letter names, concepts, word learning ability, and mental ability as predictors of 1) success in acquiring an initial reading vocabulary, and 2) reading achievement at the end of the first grade. Approximately 200 first grade pupils from intact classrooms in one public school system were tested for reading readiness as well as reading achievement at the end of the preprimer program and again at the end of first grade. The *Murphy-Durrell Reading Readiness Analysis*, the *Lee-Clark Reading Readiness Test*, the *Tests of General Ability*, Form A, Grades K-1, and the *Visual Subtest of the Murphy-Durrell Diagnostic Reading Readiness Test* were employed to measure the readiness factors. Instructional groups were formed on the basis of readiness

test results and teacher judgment. All children immediately began reading instruction within the same basal reader series, regardless of their presumed readiness. Following the preprimer program, the subjects were tested on the 78 words that had been introduced to that point. At the end of first grade, achievement was measured with the *Diagnostic Reading Scales*. Multiple regression techniques were used to determine what single and combined factors best predicted success. Knowledge of letter names (r=.65), and to a lesser degree, word learning (r=.51), were the best single predictors of initial sight vocabulary at the end of the preprimer stage. Knowledge of alphabet letter names was also related to success in reading at the end of the first grade (r=.63). Word learning ability and auditory discrimination appeared to be of some value correlating .53 with end of year achievement. Factors considered in combination produced slight improvement in the predictive index, leading Lowell to conclude that knowledge of letter names is the only desirable factor for inclusion in a reading readiness test.

Evanechko, Ollila, Downing, and Braun (89) developed and measured the contribution of a battery of indices for assessing reading readiness of school beginners in order to determine the best combinations of these tests for predicting reading achievement at the end of first grade. Subjects were 97 children from 5 first grade classrooms who were randomly selected from 10 schools in 5 different school districts. Selection of schools was made by elementary school supervisors, who were requested to choose middle-class neighborhoods and schools using a specified basal text. The battery of readiness tests administered included 13 subtests measuring 4 general areas: Concept of the Reading Task, Perceptual Ability, Linguistic Competence, and Cognitive Functioning. The battery was administered at the beginning of the school year; during the last week in May, the *Bond-Balow-Hoyt Test* was administered to every class. Reliability coefficients for the 13 subtests ranged between .50 and .95, with the single most highly reliable measure being letter recognition. The 13 subtest variables were factor analyzed and all factors with eigenvalues greater than one were analyzed. Four factors were extracted with eigenvalues greater than one, accounting for 64.195 per cent of the total variance. For interpretive purposes, the 4 factors were rotated by the varimax criterion to achieve simple structure. Factor I, with almost one-half the total variance, identifies a general reading readiness ability. Loadings of .324 or higher were considered significant. The variables, falling within all 4 gen-

eral areas being indexed, revealed a wide ranging readiness component comprised of the child's orientation to reading, certain perceptual skills, language competence, and an appropriate level of cognitive functioning. The 3 remaining factors—Listening, Conceptualization, and Literacy Behavior—were relatively narrow ones with few high loadings. They appeared to identify specific conceptual and cognitive factors. To determine the best combination of readiness measures for predicting reading achievement, several multiple linear regression models were tested. The 13 subtests of the experimental battery were included in a regression equation to predict each of the 3 subtests of the *Bond-Balow-Hoyt Achievement Test*. Only the subtests Understanding Literacy Behavior, Technical Language of Literacy, and Visual Memory did not appear as significant contributors to the regression equation.

Lessler and Bridges (193) investigated the predictive effectiveness of a number of tests, both singly and in combination; attempted to determine the accuracy of prediction; and investigated the correspondence between predictors at the beginning of first grade and performance at the end of second grade. The initial first grade sample consisted of 293 children of whom 184 were white and 109 were black. Group-administered tests given to all children early in first grade included the *Metropolitan Readiness Test (MRT)*, the *Lee-Clark Reading Readiness Test*, and the *California Test of Mental Maturity (CTMM)*. Individual screening tests were administered to 101 children in the summer prior to first grade and included the *Peabody Picture Vocabulary Test (PPVT)*, the *Bender-Gestalt Test (BGT)*, and the Bean-Bucket Game (BB), a measure of social maturity. Performance measures administered at the end of both first and second grades included the *California Achievement Test (CAT)* and a teacher rating of overall performance (TR). In order to investigate the effectiveness of each of the instruments in reflecting total performance of children, both *CAT* and TR were combined into a single criterion variable identifying learning problems and nonlearning problems based upon a defined cut-off score on both measures. On the combined criterion, 49 per cent of the children were identified as learning problems at the end of first grade. Pearson product-moment coefficients between the predictors and the performance variables (both singly and in combination) ranged from −.35 to.76, and were all statistically significant at the .001 level. The *MRT* appeared to be the best single predictor of the combined criterion of first grade performance, correlating .70 with the combined

criterion, .76 with the achievement test, and .58 with teacher ratings. Tests for the difference between dependent correlations revealed that the *MRT* was a significantly more effective predictor than either the Lee-Clark or the *CTMM* ($p<.05$ and $p<.001$, respectively). Multiple regression analysis indicated that the addition of the Lee-Clark and *CTMM* to the *MRT* accounted for an additional 6 per cent of the variance. Multiple regression analyses, combining the individual tests with each of the group tests did not add significantly to the variance accounted for by the readiness tests. Of the 196 children available for testing at the end of second grade, 119 were found to have problems and 77 performed adequately. Results showed that by using the Metropolitan cut-off scores, the researchers identified 91 per cent of the children predicted to be learning problems and 61 per cent of those predicted to be non-learning problems, who did in fact perform adequately.

Goodman and Wiederholt (114) randomly selected 33 kindergarten and 37 grade 1 children from 3 innercity Philadelphia schools for their study of the long-term predictive value for reading performance of various tests. The *Slosson Intelligence Test (SIT)* and the *Developmental Test of Visual Perception (DTVP)* were given to all children. Kindergarten children received the *Metropolitan Readiness Test (MRT)* and first grade subjects were given the *Metropolitan Achievement Test (MAT)*. The *Durrell Analysis of Reading Difficulty (DARD)* was given to all subjects 15 months after the initial testing. Intercorrelations were computed and a step-wise multiple regression performed. Intercorrelations among the *DTVP*, *SIT*, and *MRT* ranged from .40 to .49 for the kindergarten sample. For grade 1, the intercorrelations among the *MAT*, *DTVP*, and *SIT* ranged from .33 to .51. The primary predictor of second grade reading and writing achievement was found to be the *MAT* for first-grade children. Multiple correlations of the *DTVP* with the *DARD* subtests of Flash Cards, Word Analysis, Word Recognition, and Reading Comprehension were .57, .44, .41, and .39 respectively for kindergarten children.

Thomas and Chissom (333) assessed the relationship of 2 predictor variables, the *Shape-O Ball Test* and the *Otis-Lennon Mental Ability Test*, and 2 subjective estimates of reading performance, reading group placement and teacher ratings as a means of placing first grade children into reading groups. The *Shape-O Ball Test* was devised by the researchers to assess form discrimination, visual-

motor match, and fine eye-hand coordination by requiring the child under time and trial limitations to place geometric shapes into properly shaped holes on the surface of a sphere. The Shape-O Ball and Otis-Lennon tests were administered to 48 first grade children (Male=28; Female=20) from a college laboratory school. Children had been divided into 4 reading groups and rated by their teachers on a 4-part ability scale from a low of 1 to a high of 9. The *Shape-O Ball Test* correlated .64 with reading group placement and .71 with teacher ratings. Otis-Lennon scores correlated .79 with reading group placement and .82 with teacher ratings. Canonical analysis revealed a correlation of .841 between the 2 sets of variables (significant at the .001 level). Discriminant analysis was employed in an attempt to classify the students into reading groups using the objective measures as predictor. Means of each variable for the 4 groups and the prediction equations were used to calculate the range of scores by which to assign subjects to groups. The formula successfully placed 100 per cent of those children from groups one and 4, 93 per cent of group 2, and 90 per cent of group 3. The authors suggest that through the use of prediction equations and these 2 objective tests, teachers can quickly classify children into reading groups.

Rosner (287) compared IQ and perceptual skills as predictors of school achievement in first and second grade. The 32 first graders and 40 second graders were given the *Stanford Achievement Test*. Grade 1 pupils were given the *Otis-Lennon Mental Ability Test* at the end of their kindergarten year. IQ for the grade 2 children was assessed by means of the *Lorge-Thorndike Cognitive Abilities Test* at the beginning of second grade. Two perceptual tests, the *Visual Analyses Test (VAT)* and the *Auditory-Analysis Test (AAT)* were also administered. *VAT* and *AAT* raw scores were combined into a single perceptual skills score. Pearson Product Moment Correlations were computed between each of the 6 *SAT* subtest scores and each of the predictors, IQ and perceptual skills. Coefficients between perceptual skills scores and the Word Meaning, Paragraph Meaning, Vocabulary, and Word Study Skills subtests respectively were .64, .68, .55, and .56; for IQ, the corresponding coefficients of correlation were .26, .34, .33, and .18.

In Norfleet's (246) study, the *Bender-Gestalt Test (BGT)* was administered in groups of 10 to all beginning first graders in a semi-rural school district of predominantly middle-class whites. The *Gates-MacGinitie Reading Tests (GMRT)* were used as the reading criterion at the end of one year and means and standard deviations

on the 2 tests were computed for the 311 remaining children (Male=158; Female=153). A 2-tailed *t* test was used to ascertain significance of difference between means for boys and girls. *BGT* cut-off scores selected to differentiate good performance from poor performance were those scores occurring plus and minus one standard deviation from the mean. In addition, at the end of the first semester, each first grade teacher indicated the 5 best and 5 poorest readers. Chi-squares were computed comparing the number of students rated as good and poor readers whose *BGT* scores were above or below the mean for their group. Chi-square analysis was also used to test for association between *BGT* scores and reading criteria, and between *BGT* scores, kindergarten experience, and first grade success. No significant sex differences were apparent for *BGT* or CA, but the *GMRT* yielded significant differences ($p<.01$) for boys and girls, favoring girls. Results of chi-square analysis of reading achievement for the 3 designated *BGT* groups (high, medium, low) were significant at the .001 level for all sections of the Gates-MacGinitie. The *BGT* performance was especially accurate in predicting good reading performance. Teacher judgments and *BGT* performance were also significantly associated, as were prior kindergarten attendance and *BGT* performance. Sex differences were recurrent in the results of this study, generally favoring girls.

A pilot study designed by Miller (227) evaluated 10 data-gathering instruments to determine which could predict subsequent performance in first grade reading and writing. The original sample consisted of 32 kindergarten children from a midwestern city. During the spring of 1970, all of the children were individually administered 10 tests: Pencil Use, *Bender Visual-Motor Gestalt Test*, *Wepman Auditory Discrimination Test*, Number of Words in a Story, Story Organization, Sentence Elaboration, Letter Naming, Name Writing, Recognition of Words Previously Taught, and Reproduction of Words Previously Taught. The Sentence Elaboration Test itself contributed 6 independent variables to the study: Mean Sentence Length, Adjective Range, Adverb Range, Verb Elaboration, Complex Verb Preference, and Syntactic Structure Elaboration. In the spring of 1971, the remaining 23 children were administered the *Gates-MacGinitie Primary Reading Test* (Vocabulary and Comprehension), the *Gilmore Oral Reading Test* (Accuracy and Comprehension), and the *Zaner-Bloser First Grade Handwriting Test*. Relationships between the 15 independent variables obtained in kindergarten and 5 dependent variables obtained in first grade

were computed through multiple correlation procedures. Findings indicated that Recognition of Words Previously Taught was the single best predictor ($p<.01$) not only of Vocabulary and Comprehension subtests of the *Gates-MacGinitie Primary Reading Test*, but also Reading Accuracy and Comprehension subtests of the *Gilmore Oral Reading Test*. In the latter 2 instances, significance was at the 5 per cent level. In addition, the dependent variables of Syntactic Structure Elaboration, Adverb Range, and Reproduction of Words were significant predictors of Reading Accuracy, while Verb Elaboration, Reproduction of Words Previously Taught, and Adverb Range were all significant at the .01 level in predicting Reading Comprehension on the Gilmore Oral. The multiple *r* between the *Wepman Auditory Discrimination Test* and the *Gilmore Oral Reading Comprehension* subtest was significant at the .05 level. Both the *Bender Visual-Motor Gestalt Test* and the Mean Sentence Length Test produced significant multiple correlations ($p<.05$) with the *Zaner-Bloser First Grade Handwriting Test*.

Hartlage and Lucas (135) developed a group screening test for early measurement of various aspects of reading ability. The test included 5 parts: visual sequencing, auditory sequencing, visual-motor space, auditory space, and visual and auditory space. The test was administered to 44 children in 2 sections of a first grade class. All children were rated on their reading skills by their teacher team, ranked from best to poorest reader in the class, and were administered the following tests: *Wide Range Achievement Test (WRAT)*, the Bender-Gestalt, and *Draw-a-Person Test*, as well as the group screening test developed by the researchers. Each subsection of the screening test, the Bender-Gestalt, and Draw-a-Person scores were correlated with both teachers' rankings of reading ability and *WRAT* reading scores. Multiple correlations with both teachers' rating and *WRAT* reading scores were also computed for each of the 5 subsections of the screening test. The visual sequencing, auditory sequencing, and visual and auditory space subtest scores all correlated significantly with both *WRAT* reading scores and teacher rankings. The visual sequencing test showed the highest relationship to both teacher rankings (.669) and the *WRAT* score (.642). All of the above levels of confidence were at the .05 level except auditory sequencing and teacher ranking which correlated at the .01 level. The auditory space subtest correlated significantly with *WRAT* reading, but not with teacher rankings. Neither the visual-motor space subtest, the Bender-Gestalt, nor Draw-a-Person tests were correlated at a sig-

nificant level with either of the 2 reading criteria. Combination of all 5 subtests of the group screening test produced correlations of .778 with *WRAT* reading and .773 with teacher rankings. Correlations between selected subtests of the screening instrument and the criteria variables were also reported.

Ekwall, Solis, and Solis (82) compared the behavioral characteristics of students experiencing anxiety while reading by using polygraph tests and criteria defining frustration on informal reading inventories. In an attempt to determine whether any one set of scoring criteria on informal inventories remained applicable to all students regardless of age, sex, ethnicity, reading level or personality type, the authors selected a purposive sample of 62 third through fifth graders. The sample gave approximately equal representation to sex, IQ, (high, middle, low), ethnic group, and general reading level. The subjects were administered the *Wechsler Intelligence Scale for Children*, the Rorschach, and the *House-Tree-Person Projective Test* technique, and the *Diagnostic Reading Scales*. The latter was given as an informal reading inventory as the child was monitored with a polygraph. Both a polygraph expert and a neurologist interpreted each tracing individually to indicate the point of frustration as the students read. Averages of word recognition and comprehension errors at the polygraph-measured frustration level were computed and the z test was used to determine whether the level differed significantly from frustration defined by pre-existing percentages on the informal reading inventory. Further comparisons were made between 3 ethnic groups, 3 reading levels (below, at, or above grade placement), 3 intelligence and personality levels (based upon standard deviations from the mean) and sex differences. For the latter comparisons, the t test was used to determine significance. Results indicated no significant differences in polygraph-measured frustration reading levels due to grade level, sex, or ethnicity. For the overall group, there was a significant difference between commonly accepted scoring criteria for word recognition errors and the polygraph measure of frustration when repetitions were not counted as errors but not when repetitions were counted as errors. Similarly, a significant difference was found between scoring criteria for comprehension and polygraph-measured frustration. Significant differences were also found between high and low intelligence levels, between reading levels, and among various personality classifications. The authors considered the poly-

graph to be a useful instrument in detecting physiological responses indicative of psychological frustration.

Burgett and Glaser (42) determined the instructional level of 30 eighth grade remedial readers by employing both an informal reading inventory (IRI) and the *Gates-MacGinitie Reading Tests*, Survey E. The average grade equivalent score on the Gates-MacGinitie in Comprehension underestimated by 5 months the average instructional level attained with an IRI. The Vocabulary average score underestimated the instructional level by 3 months. In general, 67 per cent of the subjects attained comprehension grade equivalents on the Gates-MacGinitie within a range of from 5 months below to 5 months above IRI results. By comparison, 80 per cent of the subjects attained Vocabulary grade equivalents on the Gates-MacGinitie which were not greater than 5 months above, at, or below the instructional reading levels they attained through an IRI. The researchers noted that their findings are inconsistent with earlier formed generalizations relative to inflated standardized test scores. Results of this study led them to conclude that a tentative instructional level based upon the Vocabulary rather than the Comprehension subtest of the Gates-MacGinitie is perhaps a more accurate single indicator.

Using the group tests from the *Wisconsin Design for Reading Skill Improvement*, Askov, Otto, and Fischbach (8) explored the relationship between instruction in specific skills and improvement in general reading achievement for a group of children in grades one through 6. Scores from the *Metropolitan Readiness Tests*, *Stanford Achievement Test*, Primary and Intermediate, as well as the Word Attack portion of the *Wisconsin Test of Reading Skill Development* were obtained. For the Wisconsin test, a subject was assigned a score of 1 if 80 per cent or more of the items on a subtest were answered correctly, and zero if fewer items were correct. Scores were added across subtests to yield a mastery level score of the number of subtests passed. Data were analyzed both by age-grade equivalents and by the pre-existing non-graded units, using multivariate analysis of variance to determine the regression of the standardized test scores on the mastery level score. Orthogonal polynomials were used to isolate the various components of the curves. Results indicated a statistically significant relationship between word attack mastery level and reading performance on standardized tests at all grade levels with mastery of specific skills increasing as reading performance increases. For grade 2 children,

however, reading performance did not always increase as mastery level increased. Because of the exhibited relationship between increase in general reading level and increase in number of mastered skills, the authors concluded that a skill-centered approach to reading instruction is supported and offers implications for skill-centered reading instruction in adult basic education classes.

Callenbach (47) assessed the immediate and long-range effects of practice and instruction in test-wiseness for non-verbal materials upon the standardized reading scores of 48 relatively test naive second grade students from 2 classrooms. Subjects were ranked according to raw scores on the *Stanford Reading Test*, Primary I, then alternately assigned to 2 groups from the ranking of raw scores in each classroom. One group was randomly assigned to be experimental and the other, control. Separate materials were constructed for the experimental and control groups. The experimental materials were designed to be used in providing practice in following oral directions, response making, using time efficiently, and guessing. The materials for 8 lessons consisted of geometric forms, pictures, and arithmetic computation problems presented in a booklet form like the *Stanford Reading Test*. The directions accompanying the materials were designed to be read verbatim to the students. Eight control treatment lessons containing similar content were developed, but their format was unlike the *Stanford Reading Test* and the materials were designed to be presented without instructions on test-taking techniques. After 4 weeks of treatment, an alternate form of the Stanford was administered to both groups. Four months later, the original form of the Stanford was readministered. The *t* test for significance of difference between means for correlated observations was used to analyze the differences between mean scores for the experimental and control groups on the first and second post tests. The experimental group scored significantly higher than the control group on both post tests. The difference between mean scores on the first post test was 5.50 ($p<.025$) and on the second post test, 7.28 ($p<.01$).

Cranney (66) attempted to determine 1) if it is possible to construct a reliable and valid cloze test that can be machine scored and still retain the essential elements of the cloze procedure and 2) if the reliability and validity of a traditional fill-in-the-blank cloze test can be improved by eliminating the less effective test items. Two 300-item cloze tests were constructed from 6 1,500-word passages

selected from college textbooks in literature, social studies, and science. Two passages of approximately equal difficulty on the Flesch scale were selected from each text. Scores on the tests were the total number of correct responses. Both tests were untimed. The first was free-response with every tenth word deleted. The second test was similar but with 4 multiple choice responses for each deletion printed in the margins, making machine scoring possible. Each test was administered to 100 college sophomore psychology students who also took the *Cooperative Reading Test*, C-2. Each test was also administered to separate groups of approximately 400 students for purposes of item analysis. A total of 165 of the 300 items was eliminated from each test. The original 100 tests administered were rescored for the 135 items remaining in each test. Reliability coefficients and validity coefficients were computed for long and short versions of each test. Item analyses were done for each 300-item test by computing the levels of item difficulty and correlations of items with total scores for each test. Scores on the 2 multiple choice test forms correlated .52 (long form) and .54 (short form) with *Cooperative Reading Test* scores, and had reliability coefficients of .86 (long form) and .88 (short form). Scores on the free-response test forms correlated .52 (long form) and .51 (short form) with the *Cooperative Reading Test* and had reliability coefficients of .93 (long form) and .83 (short form). In comparison with the free-response test, the multiple choice test had a more even distribution of item difficulty and more items in the difficult range. There were 63 items of the multiple choice test that correlated above .46 with the test total score, although no items reached that level on the free response test.

Fogelson (98) examined the effects of popular background music on the reading test performance of 2 eighth grade English classes (N=28). The classes were divided into 2 equal groups according to their Stanford-Binet scores: Bright and Non-Bright. Half of each group was tested under standard conditions with the *Iowa Test of Basic Skills*, while the other half was administered the same test while hearing popular music. Comparison of means and standard deviations for the 4 groups, as well as the combined groups with and without music, showed that Bright subjects without music outperformed those with music, and the Non-Bright subjects without music outperformed those with music. The same pattern held for the combined subjects and indicated that music was a distractor. An analysis of variance showed treatment and interaction effects were significant at the .01 level.

From 250 black first graders attending a ghetto school in Philadelphia, 46 children (23 females; 23 males) were randomly selected in September by Hall and Chansky (127) for administration of 3 ability tests: the *Goodenough-Harris Drawing Test*, the *Revised Visual Retention Test*, and the *Peabody Picture Vocabulary Test*. Seven and one half months later, the *Stanford Achievement Test*, Primary I, the *Informal Reading Inventory (IRI)*, and the *Daniels Word Recognition List* were administered individually. Pearson product-moment correlations between each ability and 8 reading achievement subtests were computed. Coefficients of correlations with achievement ranged from .05 to .57. Combining the Peabody and the Benton tests in a stepwise regression yielded an *R* of .65 with the IRI and .55 with both of the other tests. The researchers suggested that both the Peabody and Benton tests provide information about subsequent reading performance for combined groups of boys and girls not included in the instruments' standardizations.

Livingston (201) studied the effects of verbal overload (defined as unnecessary language complexity) upon the achievement test scores of students of varying levels of verbal ability. The subjects were 372 middle-class students who made up the entire eighth grade class of a suburban junior high school. They were divided into 4 ability groups based upon their verbal scores on the School and College Ability Tests. The materials used were 2 test forms, both containing social studies information presented in pictorial, graphic, and written forms. For one test form, 48 multiple choice questions were taken from the junior and senior high levels of the *Sequential Tests of Educational Progress (STEP)*: Social Studies test. For the other form, the items were written in simplified form and reproduced in larger print. The original items were at the ninth grade level of difficulty, while the simplified items were at sixth grade reading level. Students were assigned forms of the test (original and simplified) by random selection without regard to sex or ability, but for analysis purposes, students were divided into 4 groups based on verbal ability. Major findings were 1) test scores on the simplified tests were higher than those on the original tests, but the difference was minimal and 2) the interaction effects between original and simplified tests were either nonexistent or too small to be of practical significance.

Pyrczak (267) determined a method for estimating the quality of reading comprehension test items by computing an index that

indicated the extent to which correct answers to items could be identified in the absence of the reading passages to which they referred. In a pilot study, selected questions from a single reading passage of the *Nelson-Denny Reading Test*, were administered to 28 graduate students in education under unspeeded conditions. Rather than read the related passages, students were directed to answer the questions on the basis of their general knowledge or upon any relationships they could detect among the items. The index obtained estimated the extent to which the correct answer to a comprehension item could be identified in the absence of the related reading passage. Answer sheets from the 28 students were then randomly assigned to 2 even groups and index values were computed separately for each group. The product-moment correlation coefficient for the relationship between the 2 sets of indices was .94. An additional 94 students were administered all 36 comprehension items from the Nelson-Denny. Reliability coefficient for the larger group was computed as in the pilot study and was .67. In addition, 67 of the subjects in the sample were asked to give the basis for their responses for each item as using general knowledge, or the interrelatedness of items, or by guessing. The author felt that information yielded from the index plus bases for responses seemed to provide useful information to test builders. It was suggested that such data could aid in determining particular strengths and weaknesses of items of high and low quality.

Ramsey and Wright (273) described the construction of a group vocabulary test based on a modification of the *Ammons Full-Range Picture Vocabulary Test*. Over 5,000 students in grades 5, 7, and 9 were the subjects. Modification of the individual instrument included selection of 50 words from the original list, and then redrawing, reordering and filming the series of pictures for group administration to the 200 randomly selected classrooms. Item difficulty for the overall sample ranged from 10.54 per cent to 96.45 per cent with the distribution slightly skewed in favor of the less difficult items. Reliability as calculated by one formula was .859. Test-retest reliability obtained on a grade 7 sample yielded a Pearsonian *r* of .894. Performance of students provided some information as to a) a "critical" age of arrival in relation to language and b) varied patterns of achievement for different cultural groups.

Seven parochial schools provided children representing a broad range of socioeconomic levels for a study by Stronck (327) to compare reading ability with achievement in science. The 7 schools

were selected according to the similarity of quality of teachers, content of courses, and methods of instruction. The reading test was the *Burnett Reading Series' Advanced Level Survey Test*, while science achievement was measured by the *Portland Science Test*. In addition, differences in achievement on questions demanding process and product knowledges in science were compared. Critical ratios between each of the 7 schools on the advanced reading test were computed. Of the 21 critical ratios produced, 6 were significant at the .01 level of confidence and represented the lower scores of the children from lowest socioeconomic levels. The rank ordering of the 7 schools on the science test by scores received on both process and product test questions produced the same ranking as on the reading test for the 2 schools with the best scores and the 2 with the poorest scores. The process questions of the test revealed 7 significant differences at the .01 level and 3 additional significant differences at the .05 level. The product questions provided 8 significant differences at the one per cent level and 4 additional significant differences at the 5 per cent level. Correlations between total scores on the reading and science tests ranged from .47 to .66 with a mean of .64. Results indicated significant differences in the performances of students at the extremes of the socioeconomic levels involved on the reading test, and the science test with its process and product questions. The *Portland Science Test*, revealing 12 significant differences between schools, appeared to be a sensitive instrument which can be used by seventh grade students of various socioeconomic levels. Although there is no evidence to support a distinction between performances on the process and product questions, there is some evidence to support the science test's minimal reliance upon reading skills.

Tuinman, Farr, and Blanton (338) explored the extent of effect on reading test scores that material rewards have when offered immediately prior to the final testing after a period of instruction. The entire student body in the seventh and eighth grades of a junior high were randomly assigned to treatments. Eighty-one experimental and 79 control subjects were administered the same form of the *Nelson-Denny Reading Test* as both the pre- and post test measure with a 4-week interval between test administrations. Instructions for the retest varied for the 2 groups. The control group subjects were told that the test was readministered for the purpose of assessing improvement. The experimental group was informed that by improving their previous scores they would be eligible for prizes

(candy bars, sweatshirts, or radios). Analysis of covariance indicated that the effect of the rewards was significant ($p<.01$) in terms of both number of items attempted and number of items correct. The adjusted mean increase for the experimental subjects was 3 months. The authors concluded that, if the terms of an actual performance contract could be applied to their results, a monetary gain could have resulted without having attempted to influence intervening instruction.

In an effort to compare general reading ability as measured by standardized reading tests with performance on actual reading tasks required for a particular job, Sticht and Caylor (325) developed the *Job Reading Task Tests (JRTT)* for 3 military jobs having civilian counterparts: cook, automotive repairman, and supply clerk. The researchers also sought to determine the effect on *JRTT* performance of specific aptitude for a job and to determine the combined effect on *JRTT* performance of having been assigned to a job area on the basis of special aptitude and specific training. Finally, data were collected showing relationships among the *Armed Forces Qualifying Test (AFQT)*, standardized reading test performance, *JRTT*, and end-of-course academic scores for men completing training school in the appropriate job area. Job reading tasks were identified through structured interview situations in which job-holders described 5 examples of having consulted reading materials during the previous month; they told how they had located the reference material and the specific part they had consulted, and told what kind of information they had been after. Thirty men were interviewed in the supply field, and 48 cooks and 85 repairmen. Reading material was classified according to the type of information the jobholder had been seeking, and tests were constructed over the commonly consulted printed material. Application of the Flesch readability formula enabled the researcher to develop comprehension questions at lower reading levels than the material and the test material. Relationships of general reading ability to performance on *JRTT* were described for men in 3 groups: an unselected sample, a group selected for special aptitude in a *JRTT* area, and a group both selected and trained in the *JRTT* area. In addition, end-of-course grades were extracted from administrative files to compute validity coefficients for *JRTT*, *AFQT* and standardized tests. Results indicated that, while general reading and *JRTT* performance are positively correlated, the *JRTT* are sensitive to selection and training,

and hence are measures of special reading abilities as well as of general reading abilities.

The relationship between reading-spelling performance and test scores on the *Lindamood Auditory Conceptualization Test (LACT)* was studied by Calfee, Lindamood, and Lindamood (43). In addition, the use of the *LACT* was investigated as a measure of the ability of kindergarten through grade 12 subjects to process and arrange phonetic sequences. The *LACT* has subjects arrange colored blocks to represent discrete sound units or integrated wordlike units. A factorial design including sex, grade, and teacher ratings on general academic achievement was employed. The *Wide-Range Achievement Test (WRAT)* was used to assess reading and spelling ability. At each grade level, multiple regression coefficients of .7 or greater were found between the *LACT* and the *WRAT* (reading and spelling combined). The major sources of variance were ability level and grade. Girls did slightly better than boys on spelling scores, but no other sex differences were noted. All students achieved mastery on discrete units of the *LACT* by grade 5, but there were statistically significant differences favoring the above-average subjects at all grade levels on the integrated units.

Rude (289) reported results from the first year field testing of the *Wisconsin Design for Reading Development* (1970-71). The Word Attack component of the design was field tested in 18 Wisconsin and 5 Colorado elementary schools. Five of the 18 Wisconsin schools were referred to as disadvantaged, since median reading achievement was a year or more below grade level. After approximately 6 months of field testing, Rude compared the Word Attack and other reading skills of children using the program with children in the same school and at the same age-grade levels the year previous. Through a questionnaire, program implementation practices at the various sites were also examined. During May, 1970, randomly selected subjects in the 23 field test schools who had not experienced the program were administered selected batteries of the *Wisconsin Tests of Reading Skill Development*: Word Attack in addition to 3 standardized reading tests; *Cooperative Primary Tests*, Word Analysis; the *Stanford Achievement Test*, PI and PII; and the *Comprehensive Tests of Basic Skills*, Vocabulary and Comprehension. Students were randomly assigned to test sittings and ordinarily participated in only one sitting. During May, 1971, another random sample of students was selected and participated in the interim testing program. Hypotheses concerning change at each grade level and

between grade levels, by type of measure, were tested separately. Data consisted of one or more change scores for each school, representing the difference in mean scores for the first implementation year and the preimplementation year for a given measure or set of measures. In cases of one change score per school, a 2-tailed *t* test was used to test for differences. A 3-step analysis was necessary if 2 or more change scores were available from each school. These steps included 1) rescaling of change scores to take into account scale difference between measures and to give more weight to more reliable measures, 2) testing for consistency in the amount and direction of change in the rescaled measures, and 3) according to the above results, applying tests to indicate either whether the raw unit change was nonzero or whether and in what measures a change occurred. On tests associated with specific program objectives, achievement favored the group enrolled in the program on more than 90 per cent of the objectives in both advantaged and disadvantaged schools. Performance on the standardized reading tests was as good or better for participating pupils, with the greatest difference on the *Co-operative Primary Test*, Phonics Analysis.

Fischer (96) sought to determine whether certain commercially-produced 10-item multiple choice reading comprehension tests were vulnerable to guessing. Over a period of several weeks, testing was conducted individually with 50 males and 30 female students or prospective students in a university's student counselling services. Each subject performed 3 tasks: read a selection, wrote a comprehension test on the selection, and wrote a comprehension test on a selection they had not read. Reading selections were taken from Science Research Associates Reading Laboratory Kit, 1959 College Prep. Edition. Two selections were chosen from an "easy" level and 2 from a "difficult" level. The tests were administered in 4 rotating patterns. Data were analyzed for each level of difficulty. Mean test scores were compared for selections which were read and those which were not read. In addition, the frequencies of all obtained scores were compared with frequencies exhibited by chance. It was found that guesses on the non-read selections scored significantly higher than expected frequencies indicated. Students were able to score from 47 per cent to 68 per cent on the tests without reading the material. Analysis of individual items revealed wide variance in their vulnerability to guessing. Certain questions were determined more "guessable," while others were

deemed invulnerable to guessing. The author attributed low reliability of the material to its brevity and high guessability.

V-12 Grouping

Little, Mabey, and Russell (199) cited evidence located from a literacy survey covering all Inner London Education Authority junior and junior-infant schools. In the fall of 1968, all children born between September 2, 1957, and September 1, 1960, were given a sentence completion reading test designed by the National Foundation for Educational Research. An alternate form of the same test was again administered in 1971 just prior to the children's transfer to secondary schooling. Background information and educational experience data were also collected including class size, countries of origin, fathers' occupational status, and teachers' knowledge and judgment of the homes and the children. An increase in reading attainment was found with increase in class size. Classes of 30 or under had a mean reading quotient of 90.7, while those of 40 or over had a mean reading quotient of 100.5. The report noted, however, that many of the larger classes were in denominational schools which have higher mean reading scores. A further analysis was made of characteristics of pupils in classes of 31-34 and of those in classes of 35-40, excluding children who had received remedial help during the previous 14 months. The mean reading quotient for the smaller size classes was 93.4 as opposed to 94.1 in the larger class size. This tendency held irrespective of nationality, social class, or educational priority ranking of the school. When class background was controlled, the findings still held. The authors pointed out that the differences were insignificant educationally and that other influences appeared to be more important than class size in determining educational achievement.

VI Reading of atypical learners

Heriot, Tavormina, and Vautrain (138) presented an abbreviated report on the use of a modified version of the *Peabody Picture Vocabulary Test* as an assessment of reading in deaf and aphasic children. The test was used for recognition of single words. The 38 children used had a mean IQ of 103.9 and a mean CA of 9-5. The *Wide Range Achievement Test* was also administered as an oral word recognition test. The coefficient of correlation between scores on the 2 tests was .72. When older children were sampled, the correlation approached .90.

In Black's (26) study, 20 graduate students and 20 aphasic adults were compared on their ability to predict successive spaces of contextual prose. Materials were 20 paragraphs of 100 words taken from various sources. For normal subjects, 70 per cent of responses were correct; for aphasics, 45 per cent. The 2 groups tended to use the same letters in their overall output as well as in their error responses.

The study by Brown, Jones, Troccolo, Heiser, Bellamy, and Sontag (39) was done to demonstrate that young trainable children could learn to read in accordance with a specific definition. Two children, each about 5 years old and each with an IQ of 49, were used as subjects. In phase 1 of the 2-part study, the children were taught to verbally label 3 dimensional objects and their corresponding printed stimuli; then they were presented with a printed stimulus and asked to touch the corresponding object. In phase 2, the subjects were asked to specify both the object and its kind, then they were taught to verbally label the printed stimuli corresponding to the specific kind of object (oil truck, dump truck). Finally, the children were required to associate the adjective-noun printed form with the object itself. Instruction occurred for 2 half-hour periods daily and included the use of tangible rewards. The 2 children learned to read 6 nouns and 12 adjective-noun phrases.

Borkowski and Kamfonik (32) studied the problem of whether or not retarded adolescents could acquire paradigm-specific mediational habits that would influence later mediational learning tasks. Two mediational sessions, separated by a 2-week time period, were utilized. Subjects were selected on the basis of their ability to read at a typical grade 1 level and were divided into a mediational group with a mean IQ of 63.4 and a control group with a mean IQ of 61.6. During the first session, terms were nouns and colors. For the mediational group, the association paradigm was A-B, B-C, A-C in which A and B were nouns and C, a color. The control group had nouns (D) linked to C, but not to A. For the second session, 2 weeks later, the A terms were adjective modifiers of B nouns and C terms were numbers (good-cookies-3). The controls had nouns as D terms which were associated with C but not with A (ball-3). The criterion for learning in both conditions was 2 perfect, but not necessarily consecutive, recitations of the list. The learning stages were not significantly different for the 2 groups in the A-B and B-C stages. However, in the A-C stage, the mediation group showed significantly better learning in both sessions. It appeared that during the second

session, A-C learning was improved by the use of the session 1 mediational strategies.

Ramanauskas (270) attempted to find out if mentally retarded children responded to contextual constraints beyond a sentence when filling in cloze blanks. The 34 boys and 24 girls had a mean MA of 10 and ranged in IQ from 43 to 80. All scored 2.5 or above on word identification on the *Wide Range Achievement Test*. Subjects were divided into 2 groups of 29 each. One group (NAT) received natural sentence order materials (NAT) followed by modified sentence order materials (MOD). The MOD group was given MOD materials first followed by NAT. For NAT, one selection of about 300 words from each of 2 second grade readers were prepared in cloze form. MOD contained the same selections and cloze blanks, but the sentences from both readers were intermingled and randomly ordered, thus minimizing between sentence dependencies. There were 120 cloze blanks in each version. Subjects who received the MOD or the NAT versions were given the alternate version approximately one week later. A repeated measures design was utilized to control for sex, word recognition ability, IQ, and language and spelling facility. More correct cloze responses were produced under NAT conditions than under MOD conditions.

The effectiveness of reinforcement procedures as a means of raising the reading and arithmetic performance of educable mentally retarded boys was studied by Ayllon, Layman, and Burke (10). The 4 boys selected for this study were identified as unmotivated, undisciplined, and troublesome. The IQ's ranged from 72 to 80. Two of the boys were 12 years of age; 2 were 13. The experiment was conducted for a total of 23 days. During the first 2 days, the class was observed to establish baseline data on disruptive behavior. Academic performance was then assessed under 3 conditions: 1) reading and math under extinction (baseline period); 2) reading under extinction, math under token reinforcement; and 3) token reinforcement for reading, math under extinction. Reinforcement consisted of tokens which could be changed for candy. During the baseline period, disruptive behavior was recorded in 98 per cent of the observation intervals. Disruptive behavior dropped sharply during reinforcement periods. Academic performance of all 4 boys rose sharply. Reading comprehension, as assessed by performance on SRA materials, rose from preprimer to grade 2 level for 2 boys and from first grade to fourth grade for the other 2.

Kline and Lee (180) identified 277 Chinese children in the Vancouver, British Columbia, public schools who were learning to read and write simultaneously in both Chinese and English. All children were given the *Iota Oral Reading Test* and the Chinese Iota Test (author constructed). The Dyslexia Quotient in English was calculated for each child following Monroe's procedure by subtracting his score on the Iota from his school placement, dividing the remainder by the minuend and multiplying by 100. Children were also asked to read from a standard basic reader for comparison with the Iota. Disability in reading Chinese was determined by scores on the Chinese Iota Test and assessments by the Chinese language teachers. If a problem was identified in either language, the following tests were then administered: *Ayers Spelling Test, Monroe Auditory Discrimination Test, Monroe Auditory-Visual Learning Test,* the *Bender-Gestalt Test, Draw-a-Person Test,* the *WISC*, and tests for cerebral dominance. Parents were also asked to complete a questionnaire. Chinese children who had no reading problems served as controls and were given the same battery of tests. It was found that 28 per cent of the children studying both languages were having a problem in one or in both. More boys than girls were found to be having difficulty in one or both languages. The findings of the tests indicated that problems in auditory discrimination were not a major cause in reading disability; that there was a relatively low incidence of difficulty in transmodal learning as reflected by the *Monroe Auditory-Visual Learning Test*; that the *WISC* was a poor predictor of reading difficulty; that crossed cerebral dominance was not significantly correlated with reading disabilities; and that the Bender-Gestalt and the Draw-a-Person tests were not reliable indicators of reading disability. The authors felt that their findings raised a question about the need for extensive testing procedures in attempting to diagnose reading disability.

Two institutionalized Down's syndrome boys, CA's 18 and 19, were the subjects of a study by Sidman and Cresson (304). A series of 7 different tests were given at several times and provided data for the study. The tests included: 1) identity matching (matching-to-sample), 2) auditory comprehension (matching a picture to a dictated word), 3) picture naming, 4) auditory receptive reading (matching a printed word to a dictated word), 5) reading comprehension (matching picture to printed word), 6) reading-comprehension (matching printed word to picture), and 7) oral reading (naming the printed word). Between administration of the test

series, instruction which was always of a matching-to-sample type occurred. Subjects were taught to select each of 20 printed words from a set of alternatives, then to match each of 20 dictated words to 6 variations of its appropriate picture. Finally, they were instructed to match the dictated to the printed word. The matching of dictated words to pictures and to printed words was found to transfer to matching printed words to pictures. The authors thus felt that their mediated-transfer paradigm was successful and provided a technique for introducing simple reading skills to severely retarded children.

Verbal discrimination (VD) learning followed by an associative matching task was utilized by Libkumen (196) in assessing the validity of the incidental learning hypothesis. Subjects were retarded and nonretarded children matched for MA. Mean IQ for the retarded group was 66.3 and for the nonretarded group, 101.2 (no test named). There were 4 phases to the study: Pretraining, Demonstration, VD learning, and Associative learning. In the pretraining phase, two 16-word serial lists were constructed from a pool of 36 monosyllable nouns with an equal number of 3-, 4-, and 5-letter words appearing in each list. Lists were randomly assigned to either a low frequency or a high frequency condition. In the former, 32 of the retarded and 32 of the nonretarded children pronounced words that were not used in the VD phase. In the high frequency condition, the remaining half of the subjects pronounced words that were then used in the VD phase. During the demonstration phase, each subject practiced on two 2-pair word lists under one of 4 pronunciation conditions until he responded correctly on 2 consecutive trials. For the VD learning phase, a list composed of 8 pairs of words from the high frequency condition in the pretraining phase was developed. Each subject was told to learn the list under one of the following 4 pronunciation conditions: 1) pronunciation of choice during the anticipation interval, 2) pronunciation of both words and choice during the anticipation interval, 3) pronunciation of choice during the anticipation interval and the right words during the feedback interval, and 4) pronunciation of both words and choice during the anticipation interval and the right word during the feedback interval. Word pairs were exposed until one perfect trial or 15 trials were completed. For the associative learning phase, all children were presented with the right and wrong words in different columns and were asked to draw a line between the words that were originally paired in the VD task. Analyses of variance were computed in

analyzing the data. Nonretarded children needed fewer trials to learn the VD task than did retarded children. The least number of trials were required when the child only pronounced his choice during the anticipation interval; the pronounciation of choice and the right and wrong words during the anticipation interval required more trials than the other conditions. The author felt that the type of learning task was a determinant, at least to some extent, of whether pretraining is beneficial or detrimental to discrimination learning.

In the report by Drinkwater (79), unfamiliar printed words were paired with high affect and low affect pictures in an attempt to determine the role of affective association strength on the word recognition of subnormal children. Subjects were 16 Australian children with CA ranging from 11-6 to 13-4 and IQ's from 40-57. Subjects were divided into 2 groups matched for CA and IQ. Three pairs of pictures were selected from Level 1 of the Peabody Language Development Kit to serve as the pictorial stimuli to be associated with 3 words. One picture had been identified as preferred in pretesting (high affect condition). A word card accompanied by its pictures was presented to subjects 5 consecutive times. At the end of the presentations for all 3 words, children were asked to identify the words 3 times in 3 different random orders. Training continued until the subject met a criterion of 9 correct consecutive recognitions. Following the attainment of that criterion, each word card alone was presented to subjects in 3 different random orders. The high affect condition group had a significantly higher mean word recognition score and also required fewer trials to reach criterion.

Evans and Bangs (91) described the results of program designed to identify, assess, and train children, ages 3 to 6, who were identified as children who would have academic difficulties. The *Language and Learning Assessment for Training (LLAT)*, a battery of tests, was assembled to pre- and post test oral language and learning skills. On the basis of test score patterns on the *LLAT*, children were assigned to a control or an experimental group. Experimental children were then grouped according to CA, language development, and learning skills and assigned to one of 3 classes: Beginning level (age 3), Pre-kindergarten (age 4), and Kindergarten (age 5). At the completion of kindergarten, children were assigned to a fourth level, called Readiness. Experimental subjects received preschool training from 1963-1966. In 1969, 31 of the 48 original experimental children were located and control children selected at random from a master list of all control subjects who had been

evaluated but not given special training. The experimental group included 23 designated as Experimental-Graduates (EGR) and 8 Experimental Drop-Outs (EDO) whose mean length of time in the program was 1.3 school years. The controls included 12 Controls-Normal (CN) who were predicted to have no difficulty in later academic achievement and 11 Controls-Language and Learning Disabilities subjects (CLD), predicted to have later academic problems. Initial scores on the *LLAT* and 2 scores on the *Science Research Associates Achievement Tests (SRA)*, reading and arithmetic, were included in the data collected and analyzed. Differences in academic achievement between groups were analyzed by considering the means of expected grade level (EGL) and the achievement tests. EGL was computed on the basis of date of entering grade 1 and the date of the achievement test. A significant difference in mean EGL was found for the CLD group over the CN group, although no significant differences were noted between the 2 for reading or arithmetic scores. The EDO group achieved one year below the CN group in reading achievement but there was no difference between the 2 for EGL.

An investigation of the role of 3 memory tasks as related to retardation in reading was carried out by Noelker and Schumsky (244). A total of 48 children between the ages of 9-0 and 9-8, matched for age and IQ, was engaged in the study. Of these, 24 were designated as normal readers by their school system and 24 were identified as retarded readers. In the latter group were children whose reading age was 2 years below mental age or one year below grade placement. The 3 memory tasks were memory for form, sequencing, and memory for position. Tasks consisted of 3 demonstration and 10 experimental problems. Subjects were individually tested for each task. For sequencing and memory for form, children were presented with shapes graded in difficulty from simple to complex. To study memory for position, a series of cards with white and black filled circles were shown and the child was asked to reproduce the series. Data were analyzed by means of t tests for the significance of the differences between the means of the 2 groups on each task. Discriminant function analyses were then conducted to determine the degree to which each of the test variables singly and in combination could distinguish group membership. A significant difference (.05) between normal and retarded readers was found on all 3 tasks. The position task was the single best individual dis-

criminator between the 2 groups with the sequencing task as the next best.

In an action-research report, Hammill, Iano, McGettigan, and Wiederholt (130), studied the effect on reading achievement of integrating educable mentally retarded children into regular classrooms and providing them with periodic supportive help in a resource room. The 22 retarded children selected for this study ranged in age from 6-10 to 12-11 and in IQ from 55 to 79. The mean MA was 6.4. An average of 33 minutes daily was given to reading instruction either individually or in small groups with no child receiving less than 30 minutes a day. In October, the average reading achievement score on the *California Achievement Test* was .87; in May, 1.54.

Neville and Vandever (238) examined the differential effects of synthetic and analytic methods on learning and transfer of learning for normal and mentally retarded children. Using the shortened version of the *WISC* to establish IQ, they matched 30 retarded children with a retarded pair on the basis of sex and MA. Three word lists were then constructed: 1) a practice list of 2 taught words and a transfer word, 2) a list of 6 taught words and 3 transfer words, and 3) a list containing 8 words to be taught and 4 to be transferred. The words were used for both synthetic and analytic conditions. For the analytic condition, words were shown in families (*fan, pan; hog, fog*), and there was an attempt to maximize configurational differences in the presentation order. In the synthetic condition, the number of new letters needed to be introduced for any given pair determined word order. Thus, transfer words differed from taught words in initial letter only. A 26 letter contrived alphabet was developed to insure inability to decode high frequency words prior to their being taught. Children were taught in groups of 5 for 2 teaching-testing sessions of 45 minutes each occurring on consecutive days. Four groups of 15 subjects each were formed: Analytic Retarded, Analytic Non-retarded, Synthetic Retarded, and Synthetic Non-retarded. The synthetic presentations focused on introducing letters and their sounds before combining them in words. In the analytic presentation, the word was first pronounced, then attention was called to its individual letters, their ascending and descending characteristics, the family characteristics, and the configuration. A 2x2 factorial multivariate analysis was utilized with subject classification and method as factors. Both groups recognized significantly more words under the synthetic method (.05 level). This superiority held true for both taught and transfer words.

An effort to determine the value of the Closed Circuit TV Reading System (CCTVRS) as an aid for the partially sighted was reported by Newman and Lax (241). The use of the CCTVRS over a 9-month period in an optometric office and over a 3-month period in a university library was evaluated. In the optometric office, 85 randomly selected patients used the CCTVRS. Their visual acuity range was from 20/100 to 20/1200. In the university study, 21 legally blind students were invited to participate in the study, but only 8 opted to do so. Of these, only one was a consistent user of the CCTVRS. In these 8 students, average reading speed increased from 284 to 390 words per minute during the period of the study. In the clinical situation, the CCTVRS was recommended in 8 cases with low acuity. No final data were reported.

Lansdown and Davis (189), using 30 educationally subnormal (ESN) children aged 6-11 and 24 British infant school children aged 5-7, attempted to compare concepts of various aspects of reading. Questions were asked about books at home, about ability to write, about recognition of a bus destination. In addition children were given questions accompanied by a picture or concrete object and asked about such things as what parents do when they read and what the spaces between words were for. In general, ESN children did not respond with the same degree of cognitive clarity as 5 year old children did until the age of 9.

Annotated bibliography[1]

1. ABEL, MIDGE B. American Indian Life as portrayed in children's literature. *Elementary English*, February 1973, 50, 202-208. (III-2)

   Analyzes American Indian life as depicted in children's literature published since 1960. Only materials for reading levels one through 3 were reviewed.

2. ABRAMS, S. G., & ZUBEK, B. L. Some temporal characteristics of information processing during reading. *Reading Research Quarterly*, Fall 1972, 8, 40-51. (IV-12)

   Analyzes the eye movements during reading of 12 college students to determine the relative pause time for occulomotor versus information processing fixations.

3. ADAMS, EFFIE KAY. Reading interests of black and white students in two separate reading laboratories. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 50-56. (III-4)

   Compares the 25 most frequently listed books identified by 521 white college undergraduate students with a similar listing obtained from 501 black students. Students were from a northern and a southern university.

4. AIKEN, LEWIS R., JR. Language factors in learning mathematics. *Review of Educational Research*, Summer 1972, 42, 359-385. (I)

   Reviews studies pertaining to the effects of all language factors on mathematics learning and teaching.

5. ANDERSON, RICHARD C. Learning principles from text. *Journal of Educational Psychology*, March 1973, 64, 26-30. (IV-9)

   Provides 162 junior and senior high school students with passages requiring responses to tests that contained items which were identical, similar, or dissimilar to the original passages.

6. ANDERSON, WILLIAM W. Self-directed activity as a variable in reading instruction. *Reading World*, October 1972, 12, 3-14. (IV-12)

   Explores the role of activity in the reading process among a sample of 157 students in 15 fourth grade classrooms in 2 rural school districts.

1 Numbers have been assigned to major and subheadings in the first part of the summary as cross-reference aids. At the end of each item in the *Annotated bibliography*, a number in parentheses shows the classification under which the item is discussed.

7. APPLEBEE, ARTHUR N. Toward independent measures of speed of reading. *Journal of Learning Disabilities*, January 1973, 6, 16-20 (IV-11)

   Describes a measure of speed of reading known vocabulary tested on a mixed sample of 84 boys.

8. ASKOV, EUNICE N.; OTTO, WAYNE; & FISCHBACH, THOMAS. Development of specific reading skills in adult education. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference*, 1971. Pp. 46-51. (V-11)

   Presents data to support a rationale for emphasis on skill development in Adult Basic Education reading classes. Tests from the Wisconsin Design for Reading Skill Development were administered to children in grades 1-6.

9. ATKIN, CHARLES K. Anticipated communication and mass media information-seeking. *Public Opinion Quarterly*, Summer 1972, 36, 188-199. (III-1)

   Studies the social utility of media content for promoting interpersonal communication. Subjects were 69 high school seniors enrolled in a sociology class.

10. AYLLON, TEODORO; LAYMAN, DALE; & BURKE, SANDRA. Disruptive behavior and reinforcement of academic performance. *Psychological Record*, Summer 1972, 22, 315-323. (VI)

    Describes the use of a variety of reinforcers to strengthen the reading and arithmetic performance of 4 highly disruptive educable mentally retarded boys.

11. AYRES, A. JEAN. Improving academic scores through sensory integration. *Journal of Learning Disabilities*, June 1972, 5, 338-343. (V-10)

    Assesses the effect of remedial activity specifically for integrative dysfunction on the academic scores of 42 children with learning disabilities.

12. BAILEY, DAVID SHERMAN. Deprivation and achievement as factors in auditory comprehension. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference*, 1971. Pp. 198-205. (IV-15)

    Attempts to differentiate effects of cultural deprivation and achievement characteristics as related to the auditory comprehension of 80 eighth graders.

13. BALL, THOMAS S., & DEICH, RUTH F. Reading disability and hypothesis-formation: an application of the Postman and

Bruner theory. *Perceptual and Motor Skills*, April 1972, 34, 383-386. (IV-13)

Hypothesizes that reading disability might be related to premature hypothesis-formation or guessing to supply a response. Uses 20 fifth and sixth graders identified as retarded in reading achievement and 20 third graders selected as controls.

14. BALSER, ELIZABETH. The free recall and category clustering of factual material presented in complex sentences. *Psychonomic Science*, June 25, 1972, 27, 327-328. (IV-7)

Investigates the abilities of 80 college freshmen to recall material presented in complex sentences when given varying kinds and amounts of instruction in how to cluster the sentences as an aid to memory.

15. BARNES, JAMES ALBERT, JR., & BARNES, NANCY MARIE. An examination of the Dolch Basic Sight Vocabulary in the California state-adopted primary reading, primary spelling, and primary English series. *California Journal of Educational Research*, September 1972, 23, 163-176. (V-9)

Analyzes 32 textbooks in a word-by-word Dolch frequency count. The textbooks were primary reading, spelling, and English.

16. BARON, JONATHAN. Phonemic stage not necessary for reading. *Quarterly Journal of Experimental Psychology*, May 1973, 25, 241-246. (IV-7)

Presents college students with phrases containing homonyms and asks them to respond to the sense of the phrase in order to judge the effect of what sounds sensible but is nonsense when written.

17. BARRON, RICHARD F. Effects of advance organizers and grade level upon the reception learning and retention of general science content. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 8-15. (IV-9)

Explores the interaction between 2 types of advance organizers (graphic and prose) and each of 7 grade levels, 6-12.

18. BAZEMORE, JUDITH S., & GWALTNEY, WAYNE K. Personality and reading achievement: the use of certain personality factors as discriminatory. *California Journal of Educational Research*, May 1973, 24, 114-119. (IV-14)

Measures 14 personality factors for 68 students to 12 years old to determine if any discriminate the disabled from non-disabled readers.

19. BELL, ANNE E., & AFTANAS, M. S. Some correlates of reading retardation. *Perceptual and Motor Skills*, October 1972, 35, 659-667. (IV-13)

Tests the efficacy of a battery of perceptual, visual-motor, and intellectual tests given to preschool children against their reading achievement at the end of first grade to describe the incipient retarded reader.

20. BELMONT, IRA; FLEGENHEIMER, HANNAH; & BIRCH, HERBERT G. Comparison of perceptual training and remedial instruction for poor beginning readers. *Journal of Learning Disabilities*, April 1973, 6, 230-235. (V-10)

Compares the effect of supplementary perceptual training and remedial instruction on the performance of 32 children identified as poor risks for beginning reading.

21. BERNSTEIN, JEANNE E. Minorities in fiction for young children. *Integrated Education*, May 1973, *11*, 34-37. (III-2)

Studies the role of minorities in 98 stories written for young children between 1935 and 1970.

22. BESHAI, JAMES A. Content analysis of Egyptian stories. *The Journal of Social Psychology*, August 1972, 87, 197-203. (III-2)

Obtains 20 stories from recent readers used with Egyptian children ages 8 through 12 and contrasts them with materials from the '20's and '50's for various types of imagery.

23. BICKLEY, RACHEL T.; BICKLEY, A. C.; & COWART, HARRY. Oral language responses and reading performance in the intermediate grades. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference*, 1971. Pp. 11-13. (IV-7)

Uses 52 fourth year public school pupils in a study of the effectiveness of oral responses to word stimuli as a predictor of reading achievement.

24. BISHOP, MICHAEL E. Media use and democratic political orientation in Lima, Peru. *Journalism Quarterly*, Spring 1973, 50, 60-67, 101. (III-1)

Interviews 632 adult males in Lima, Peru, in an attempt to determine whether high media use is utilized in order to compensate for lack of education in the realm of politics.

25. BLACK, F. WILLIAM. Neurological dysfunction and reading disorders. *Journal of Learning Disabilities*, May 1973, 6, 313-316. (IV-13)

Investigates intellectual ability, visual perception, and achievement of 2 samples of 25 children with reading disorders attributed to neurological disorders and compares performance based on hemispheric deficits.

26. BLACK, JOHN W. Letter prediction by aphasic persons. *Journal of Communication Disorders,* September 1972, 5, 247-250. (VI)

Compares the predictions of successive spaces of unrelated English paragraphs of 100 words each. The predictions were made by 20 normal and 20 aphasic adults.

27. BLANTON, WILLIAM E., & BULLOCK, TERRY. Cognitive style and reading behavior. *Reading World,* May 1973, *12,* 276-287. (I)

Surveys the literature and research on cognitive styles and reports studies relating them to reading performance.

28. BLANTON, WILLIAM E., & TUINMAN, J. JAAP. Ausubel's theory of meaningful learning: implications for reading research. *Reading World,* March 1973, *12,* 202-211. (I)

Describes Ausubel's theory of advance organizers, summarizes 13 studies dealing with it, and suggests effects on reading research.

29. BLIESMER, EMERY P. 1970 review of research on college-adult reading. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference,* 1971. Pp. 361-389. (I)

Reviews approximately 180 research reports on college-adult level reading from September, 1969, to September, 1970.

30. BLIESMER, EMERY P. 1971 review of research on college-adult reading. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference,* 1972, vol. 2. Pp. 237-269 (I)

Examines 192 research reports on college-adult reading which appeared from September, 1970, to September, 1971.

31. BLOUNT, H. PARKER, & JOHNSON, RONALD E. Grammatical structure and the recall of sentences in prose. *American Educational Research Journal,* Spring 1973, *10,* 163-168. (IV-7)

Analyzes results obtained from 18 grade 6 pupils concerning the effect of active versus passive voice and temporal order on recall of information.

32. BORKOWSKI, JOHN G., & KAMFONIK, ALLAN. Verbal mediation in moderately retarded children: effects of successive mediational experiences. *American Journal of Mental Deficiency*, September 1972, 77, 157-162. (VI)

Explores verbal mediation in 40 moderately retarded adolescents.

33. BOYD, WILLIAM MCKENDREE. Repeating questions in prose learning. *Journal of Educational Psychology*, February 1973, 64, 31-38. (IV-9)

Investigates the effect of one or 5 questions before or after one or 5 paragraphs to determine the relative effects of attention and retention among 220 undergraduates.

34. BRAAM, LEONARD S., & WALKER, JAMES E. Subject teachers' awareness of reading skills. *Journal of Reading*, May 1973, *16*, 608-611. (II)

Replicates an earlier study and summarizes information from 81 teachers in 9 different content areas from 15 high schools responding to a questionnaire related to reading skills, teacher's background in reading, and elements of the particular programs in the schools.

35. BRIDGES, JUDITH S., & LESSLER, KEN. Goals of first grade. *The Reading Teacher*, May 1972, 25, 763-767. (V-1)

Evaluates the first grade goals and evaluative standards of first and second grade teachers, administrators, and university personnel by means of a questionnaire.

36. BRIGGS, BARBARA C. An investigation of the effectiveness of a programmed graphemic option approach to teaching reading to disadvantaged children. *Journal of Reading Behavior*, Winter 1972-73, 5, 35-46. (V-5)

Compares a programed linguistically based graphemic reading approach with an eclectic approach for teaching 137 disadvantaged children in first and second grade.

37. BRITTON, GWYNETH E. Preservice reading methods instruction: large-group/on-site/individualized. *Reading Improvement*, Spring 1973, *10*, 29-32. (II)

Surveys the attitudes of 66 undergraduate students toward a course including in-school experience.

38. BROWN, D. L. Some linguistic dimensions in auditory blending. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference*, 1971. Pp. 227-236. (V-4)

Compares 6 approaches to teaching 8 types of blends to 120 preschool children.

39. BROWN, LOU; JONES, STEPHEN; TROCCOLO, ELIZABETH; HEISER, CHRISTINE; BELLAMY, THOMAS; & SONTAG, EDWARD. Teaching functional reading to young trainable students: toward longitudinal objectives. *The Journal of Special Education*, Fall 1972, 6, 237-246. (VI)

Assesses attempts to develop functional literacy in 2 severely retarded children—IQ scores of 49.

40. BRULAND, R. A. Listening and listening-reading at two rates of representation by fifth grade pupils. In Margaret Early (Ed.), *Language face to face*, Syracuse University, 1971. Pp. 137-153. (V-6)

Notes the relative effectiveness of normal versus compressed speech on listening versus reading-listening as a means of retaining information. Three fifth grade classes (N=117) and 20 social studies stories were utilized.

41. BULL, SHEELAGH G. The role of questions in maintaining attention to textual material. *Review of Educational Research*, Winter 1973, 43, 83-87. (I)

Reviews studies of mathemagenic behavior in terms of consideration given to the arousal effect of questions.

42. BURGETT, R. E., & GLASER, N. A. Appraising the revised standardized reading test. *Elementary English*, January 1973, 50, 71-74. (V-11)

Evaluates reading behavior of 30 eighth grade remedial readers to compare instructional level as assessed by an informal reading inventory and a standardized reading test.

43. CALFEE, ROBERT C.; LINDAMOOD, PATRICIA; & LINDAMOOD, CHARLES. Acoustic-phonetic skills and reading—kindergarten through twelfth grade. *Journal of Educational Psychology*, June 1973, 64, 293-298. (V-11)

Reports on the administration of an individual auditory-phonetic test to 660 subjects and correlates results with concurrent reading performance.

44. CALLAHAN, LEROY G., & PASSI, SNEH LATA. Textbooks, transitions, and transplants. In C. Alan Riedesel (Ed.), Using research in teaching. *The Arithmetic Teacher*, May 1972, 19, 381-385. (III-2)

Discusses the "activity-centered laboratory approach" as opposed to a textbook-centered approach for teaching elementary

mathematics, then reports a study which sampled 3 math textbook series at grades 3 through 6 in an attempt to classify cognitive processes that are fostered by the text books.

45. CALLAWAY, BYRON, & JARVIS, OSCAR T. Program and materials used in reading instruction: a survey. *Elementary English*, April 1972, 49, 578-581. (II)

Summarizes the results of a survey of 104 elementary principals to determine the types of programs and materials used in reading instruction.

46. CALLAWAY, BYRON; MCDANIEL, HARRY; & MASON, GEORGE E. Five methods of teaching language arts: a comparison. *Elementary English*, December 1972, 49, 1240-1245. (V-5)

Attempts to determine the effectiveness of methods of teaching language arts which involve coordinated instructions as compared with ones which do not. Includes 30 grade 1 classrooms in the study.

47. CALLENBACH, CARL. The effects of instruction and practice in content-independent test-taking techniques upon the standardized reading test scores of selected second-grade students. *Journal of Educational Measurement*, Spring 1973, *10*, 25-29. (V-11)

Instructs 24 relatively test-naive second graders in test taking techniques through administration of a non-reading test and compares their performance with that of 24 children who had not received instruction.

48. CARMON, AMIRON; NACHSHON, ISRAEL; ISSEROFF, AMI; & KLEINER, MURRAY. Visual field differences in reaction times to Hebrew letters. *Psychonomic Science*, August 1972, 28, 222-224. (IV-1)

Compares visual field superiority in reaction time to verbal stimuli which could be influenced by the direction of reading associated with the stimuli, using 6 or fewer students in each of 3 experiments.

49. CAMERON-JONES, MARGOT, & REID, JESSIE F. Styles of teaching reading. *Reading*, June 1972, 6, 14-20. (II)

Concentrates on the differences in teacher behavior and attention given to 19 backward readers in the regular classroom as opposed to the remedial situation.

50. CARVER, RONALD P. Comparisons among normal readers, speed readers and clairvoyant readers. In Frank P. Greene (Ed.), College reading: problems and programs of junior and

senior college. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 150-155. (IV-11)

Extends earlier study comparing speed readers and normal readers to include the comprehension scores of 6 persons who had not read the material.

51. CARVER, RONALD P. A critical review of mathemagenic behaviors and the effect of questions upon the retention of prose materials. *Journal of Reading Behavior*, Spring 1972, 4, 93-119. (I)

Explores research on the effect of questions on the retention of prose material with respect to 4 variables.

52. CASHDAN, ASHER. Backward readers—research on auditory-visual integration. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 166-172. (IV-13)

Investigates whether backward readers perform less well than comparable normal children on an intersensory task and how far the difference between the normal and retarded readers could be lessened by a modification in the test procedure. The 22 subjects were 9 year olds.

53. CHAMPION, DEAN J., & MORRIS, MICHAEL F. A content analysis of book reviews in the *AJS*, *ASR* and *Social Forces*. *American Journal of Sociology*, March 1973, 78, 1256-1265. (III-2)

Samples 2,378 book reviews appearing over a 20-year period in 3 journals and analyzes their contents for types and nature of criticism and regionality of reviewers.

54. CHING, DORIS C. The teaching of reading in kindergarten. *California Journal of Educational Research*, September 1972, 23, 156-162. (V-1)

Surveys 931 kindergarten teachers by using a questionnaire designed to assess both prereading and reading activities on the kindergarten level.

55. CHIU, LIAN-HWANG. Reading preferences of fourth grade children related to sex and reading ability. *The Journal of Educational Research*, April 1973, 66, 369-373. (IV-17)

Administers a forced-choice questionnaire to 99 fourth graders to investigate children's reading preference as related to their sex and reading ability.

56. CHRISTINA, ROBERT. Learning sight words. In Margaret Early (Ed.), *Language face to face*. Syracuse University, 1971. Pp.

109-114. (V-3)

Compares the ability of kindergarten children (N=120) to learn 8 words by a look-say technique augmented by tracing in i.t.a. and in traditional orthography.

57. CHRISTINA, ROBERT. Replication study: word boundaries. In Margaret Early (Ed.), *Language face to face*. Syracuse University, 1971. Pp. 115-119. (IV-12)

Replicates an earlier study on first grade children's understanding of word boundaries. A total of 67 children were included.

58. CLINE, TERRY A. Readability of community college textbooks. *Journal of Reading*, October 1972, *16*, 33-37. (V-9)

Compares the readability level of 17 textbooks used in a community college with the reading level of 279 students enrolled in the school.

59. CLINE, TERRY A. Readability of community college textbooks and the reading ability of the students who use them. *Journal of Reading Behavior*, Spring 1973, 5, 110-118. (IV-18)

Compares the readability of community college textbooks with reading ability of 279 students (freshmen) who read them.

60. COCKBURN, JUNE M. Annual surveys of reading disability in a Scottish county. *British Journal of Educational Psychology*, June 1973, 43, 188-191. (V-5)

Describes a program testing the reading of all 7 year old children in one county (about 1,500 per year) for the last 11 years, including one followup study of 1,390 10 to 11 year old children aimed at examining their progress in reading.

61. COLEMAN, EDMUND B. Developing a technology of written instruction: some determiners of the complexity of prose. In Ernst Z. Rothkopf & Paul E. Johnson (Eds.), *Verbal learning research and the technology of written instruction*. New York: Teachers College Press, Columbia University, 1971. Pp. 155-204. (IV-18)

Presents a series of 5 studies investigating various aspects of readability.

62. COLEMAN, HOWARD M. The West Warwick visual perception study—part I. *Journal of the American Optometric Association*, 1972, 43, 452-462. (IV-5)

Evaluates over 4,000 students with a visual-perceptual-motor behavior test to determine if there is a relationship between visual-perceptual-motor skills and academic performance.

63. COLEMAN, HOWARD M. The West Warwick visual perception study—part II. *Journal of the American Optometric*

Association, May 1972, 43, 532-543. (IV-5)

Describes a pilot intervention program which uses a motor-based approach to learning combined with a phonic skills approach to reading instruction.

64. COOPER, BERNICE, & SMITH, DOYNE M. Reactions of sixth-grade students to remembered favorite books of elementary school teachers. *Elementary English*, November 1972, 49, 1010-1014. (IV-17)

Determines the recollected childhood books of 501 elementary teachers (grades 1-8) and asks 595 sixth grade pupils to rate the 9 most frequently mentioned titles on a 3-point scale.

65. COOPER, CHARLES R. *Measuring growth in appreciation of literature*. Newark, Delaware: ERIC/CRIER + IRA, 1972. (I)

Includes a review and synthesis of the research on literature appreciation measurement. Includes a bibliography.

66. CRANNEY, A. GARR. The construction of two types of cloze reading tests for college students. *Journal of Reading Behavior*, Winter 1972-73, 5, 60-64. (V-11)

Develops a machine-scorable multiple choice cloze test and obtains validity and reliability coefficients.

67. CROUSE, JAMES H., & IDSTEIN, PETER. Effects of encoding cues on prose learning. *Journal of Educational Psychology*, August 1972, 63, 309-313. (IV-9)

Reports 2 experiments investigating the influence of encoding cues on prose learning. Passages were presented to 18 undergraduate students who were assigned to one of 8 conditions in the first experiment. Used 33 undergraduate students in experiment II, assigning them to one of 2 conditions.

68. CULLINAN, BERNICE E. Teaching literature to children, 1966-1972. In Jane Porter (Ed.), Research report. *Elementary English*, November 1972, 49, 1028-1036. (I)

Examines research literature on teaching literature to children.

69. CUNNINGHAM, DONALD J. Aspects of research on prose learning applied to reading. *Viewpoints*, September 1972, 48, 1-14. (I)

Surveys literature on learning from connected discourse as applied to reading.

70. CUNNINGHAM, DONALD J. The retention of connected discourse: a review. *Review of Educational Research*, Winter 1972, 42, 47-71. (I)

Reviews studies concerned with the retention of verbal information in conected discourse.

71. CUSHING, WILLIAM G., & LEMERT, JAMES B. Has TV altered students' news media preferences? *Journalism Quarterly*, Spring 1973, 50, 138-141. (III-1)

Interviews a sample of 165 students and 248 non-students in an attempt to gather data on media preference and believability for news coverage.

72. DAINES, DELVA, & MASON, LYNNE G. A comparison of placement tests and readability graphs. *Journal of Reading*, May 1972, 15, 597-603. (IV-18)

Tests the hypothesis that there is no difference between assigned grade levels of test item selections from 8 reading tests and the plotted grade levels of these same selections when Fry's Readability Graph Extended through Preprimer Level is used to determine grade level.

73. DALE, EDGAR; RAZIK, TAHER; & PETTY, WALTER. *Bibliography of vocabulary studies*. Columbus, Ohio: Ohio State University, 1973. (I)

Presents the fifth edition of an itemized bibliography of vocabulary studies. Includes works from 1874 through 1972.

74. DAVIS, FREDERICK B. Psychometric research on comprehension in reading. *Reading Research Quarterly*, Summer 1972, 7, 628-678. (I)

Reviews the best known models of comprehension in reading.

75. DEMOTT, JOHN. 'Interpretative' news stories compared with 'spot' news. *Journalism Quarterly*, Spring 1973, 50, 102-108. (III-2)

Utilizes a content analysis procedure in an effort to determine the differences between 92 interpretative and 92 non-interpretative newspaper items taken from papers with circulation over 250,000.

76. DICKINSON, GARY, & RUSNELL, DALE. A content analysis of adult education. *Adult Education Journal*, Spring 1971, 21, 177-185. (III-2)

Analyzes the first 20 volumes of *Adult Education* to note trends and patterns in the content of the journal.

77. DONALDSON, O. FRED. Geography and the black American: the white papers and the invisible man. *The Journal of Geography*, March 1971, 70, 138-149. (III-2)

Examines various geography texts, journals, and other material and notes the treatment of blacks in them.

78. DOWNING, JOHN. Cross-national comparisons of reading achievement. In John Downing (Ed.), *Comparative reading*. New York: Macmillan, 1973. Pp. 32-64. (I)

Reviews and critically analyzes selected cross national research reports.

79. DRINKWATER, BETTY A. The significance of affect in verbal learning by subnormal children—an exploratory study. *Australian Journal of Psychology*, December 1972, 24, 327-329.(VI)

Investigates the effects of affect in training retarded children—IQ's 40-60—to associate pictures with unfamiliar printed words.

80. DUFFY, OWEN B., IV; CLAIR, THEODORE N.; EGELAND, BYRON; & DINELLO, MARIO. Relationship of intelligence, visual-motor skills, and psycholinguistic abilities with achievement in the third, fourth, and fifth grades: a follow-up study. *Journal of Educational Psychology*, 1972, 63, 358-362. (IV-12)

Investigates the relationships of intelligence, psycholinguistic abilities and visual-motor skills with achievement using 64 third, 67 fourth, and 57 fifth graders.

81. DWYER, FRANCIS M. *A guide for improving visualized instruction*. State College, Pennsylvania: Learning Services, 1972. (I)

Summarizes studies having to do with the use and effectiveness of visual materials. Includes a model for the empirical validation of visual materials used for instructional purposes.

82. EKWALL, ELDON E.; SOLIS, JUDY K. ENGLISH; & SOLIS, ENRIQUE, JR. Investigating informal reading inventory scoring criteria. *Elementary English*, February 1973, 50, 271-274, 323. (V-11)

Attempts to determine whether any set of criteria for scoring informal reading inventories is related to variables of IQ, age, sex, ethnic background, reading level, or personality in a study of 62 third, fourth, and fifth graders. Compares frustration level on an informal reading inventory with that on a polygraph.

83. ELDER, JOSEPH W. The decolonization of educational culture: the case of India. *Comparative Education Review*, October 1971, 15, 288-295. (III-2)

Presents a content analysis of 744 lessons in language text-

books from 2 different sections of India. The textbooks were from 2 different time periods.

84. ELENBOGEN, ELAINE, & SIMMONS, BENITA. Diagnosis and remediation of potential reading failure: a modality approach. *Illinois School Research*, Winter 1973, *9*, 46-50. (V-10)

Evaluates effect of a remedial program teaching through modality strengths on the performance of kindergarten children identified as potential reading failures.

85. ELLEY, WARWICK B., & TOLLEY, CYRIL W. *Children's reading interests*. Wellington, New Zealand: New Zealand Council for Educational Research & the Wellington Council of the International Reading Association, 1972. (IV-17)

Samples approximately 500 children at each of 4 class levels by questionnaires to determine leisure time interests, preferred reading materials, ways in which books are selected, favorite authors and books, newspaper reading habits, and favorite comics.

86. EMANS, ROBERT. The effect of verb simplification on the reading comprehension of culturally different high school students. *Reading World*, March 1973, *12*, 162-168. (IV-15)

Compares the effects of verb simplification on the reading comprehension of 2 intact ninth grade classes in each of 3 schools.

87. ESTES, THOMAS H. Effects of advance organizers upon meaningful reception learning and retention of social studies content. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of National Reading Conference*, 1972. Pp. 16-22. (IV-9)

Investigates the facilitative effects of advance organizers for 157 students in 2 social studies classes in each of grades 8 to 12.

88. EVANECHKO, P. O., & MAGUIRE, T. O. The dimensions of children's meaning space. *American Educational Research Journal*, Fall 1972, *9*, 507-523. (IV-8)

Develops an instrument to define semantic spaces of children and to indicate how these spaces change over time. The test is administered to 266 fifth and eighth graders.

89. EVANECHKO, PETER; OLLILA, LLOYD; DOWNING, JOHN; & BRAUN, CARL. An investigation of the reading readiness domain. *Research in the Teaching of English*, Spring 1973, 7, 61-78. (V-11)

Proposes a battery of indices for assessing reading readiness in a study of 97 first graders.

90. EVANS, FRANKLIN R., & REILLY, RICHARD R. A study of speededness as a source of test bias. *Journal of Educational Measurement*, Summer 1972, *9*, 123-131. (IV-15)

Compares speeded and unspeeded scores on the Reading Comprehension section of the *Law School Admission Test* to determine whether it was more speeded for seniors from predominantly black colleges than for a more typical population.

91. EVANS, JOYCE STEWART, & BANGS, TINA. Effects of preschool language training on later academic achievement of children with language and learning disabilities: a descriptive analysis. *Journal of Learning Disabilities*, December 1972, 5, 585-592. (VI)

Studies a preschool predictive instrument and the effects of a preschool training program on the later academic achievement of children with language and learning disabilities.

92. FARMER, CORNELIA REYNOLDS, & GARFIELD, SOL L. The relationship between ability to read and the meaning and expression of emotion. *Journal of Learning Disabilities*, December 1971, 4, 558-562. (IV-14)

Compares results from several measures of emotional meaning and expression with the reading ability of 56 boys from a residential treatment center for emotionally disturbed boys.

93. FASICK, ADELE MONGAN. Television language and book language. *Elementary English*, January 1973, 50, 125-131. (IV-7)

Assesses and compares 4 types of sentence structures used in 3 commercial television programs and 5 children's picture books to explain the difference in relationships to reading.

94. FEELEY, JOAN T. Television and children's reading. *Elementary English*, January 1973, 50, 141-148. (I)

Evaluates various studies which investigate the effect of television viewing on the reading habits, preferences, and achievement of children.

95. FIEDLER, MARGARET. Did the clinic help? *Journal of Reading*, October 1972, *16*, 25-29. (V-10)

Reports a follow-up study of 29 high school students who received reading clinic help sometime during their high school years.

96. FISCHER, ROBERT F. Reading comprehension tests: multiple guess? *The Alberta Journal of Educational Research*, March 1973, *19*, 1-6. (V-11)

Explores guessability of multiple choice test items in a study involving 80 university students.

97. FLACK, MICHAEL J. Cultural diplomacy: blindspot in international affairs textbooks. *International Educational and Cultural Exchange*, Winter 1972-73, 8, 11-18. (III-2)

Examines in 171 US textbooks published between 1945 and mid 1971 the type and scope of treatment given international relations, politics, and organizations.

98. FOGELSON, SUZANNE. Music as a distractor on reading test performance of eighth grade students. *Perceptual and Motor Skills*, June 1973, 36, 1265-1266. (V-11)

Administers a reading test to 28 eighth grade students identified as either bright or not bright and evaluates the effect of popular instrumental music on test results.

99. FOLLMAN, JOHN; LOWE, A. J.; UPRICHARD, EDWARD; ROBERTS, LOREN; & VILLEME, MELVIN. Typeface and pleasingness, legibility, preference, reading comprehension and reading rate. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 141-145. (IV-18)

Studies the effect of 3 typefaces on readers' judgments of pleasingness, legibility, and preference as well as on reading comprehension and rate. Subjects were 86 college freshmen.

100. FRANCIS, HAZEL. Sentence structure and learning to read. *The British Journal of Educational Psychology*, June 1972, 42, 113-119. (IV-7)

Tests the ability of 50 children to match and comprehend sentences and to show awareness of structure in sentence-splitting tasks related to number of words pronounced at 4 age levels.

101. FRANCO, E. J. Operation upgrade. *Journal of Reading*, November 1972, *16*, 120-123. (V-10)

Reports results on a summer school program conducted with over 100 seventh grade students identified as one to 3 years retarded in terms of grade level.

102. FRASHER, RAMONA, & WALKER, ANNABELLE. Sex roles in early reading textbooks. *The Reading Teacher*, May 1972, 25, 741-749. (III-2)

Compares male and female roles, relationships, and importance in 734 stories appearing in 4 basal reading series published between 1962 and 1970.

103. FRIEDMAN, MORTON P., & GREITZER, FRANK L. Organization and study time in learning from reading. *Journal of Educational Psychology*, December 1972, 63, 609-616. (IV-4)

Uses 224 undergraduates, and investigates the effect of attribute or name-organization and of single or dual organization patterns on the learning from reading.

104. FUDIN, ROBERT, & KENNY, JOHN T. Some factors in the recognition of tachistoscopically presented alphabetical arrays. *Perceptual and Motor Skills*, December 1972, 35, 951-959. (IV-1)

Presents 6-letter nonsense arrays tachistoscopically in the right visual field and the left visual field at 3 displacements from a central fixation point to 20 subjects.

105. FUHR, MORTON L. The typewriter and retarded readers. *Journal of Reading*, October 1972, *16*, 30-32. (V-10)

Assesses the effect of typewriting instruction on the reading achievement of 64 high school sophomores identified as 2 or more years retarded in reading.

106. FURBY, LITA. The development of word perception and problem solving strategies. *Visible Language*, Winter 1972, 6, 45-58. (IV-5)

Focuses on the developmental changes in the perceptual process and the problem solving strategies of 48 second, fifth, and eighth graders.

107. GALANTE, MARGARET B.; FLYE, MARION E.; & STEPHENS, LILLIAN S. Cumulative minor deficits: a longitudinal study of the relation of physical factors to school achievement. *Journal of Learning Disabilities*, February 1972, 5, 75-80. (IV-1)

Uses data collected over a 7-year period (K-6 grades) on 71 children in a normal school population in an exploration of the relationship between achievement and physical factors.

108. GEESLIN, DORINE H., & WILSON, RICHARD C. Effect of reading age on reading interests. *Elementary English*, May 1972, 49, 750-756. (IV-17)

Assesses the effect of reading age on the reading interests of 30 subjects who were 8 year old pupils reading beyond grade and 30 pupils 12 years old and reading below grade.

109. GEYER, JAMES R., & CAREY, ALBERT R. Predicting and improving comprehensibility of social studies materials: the roles of cloze procedure and readability adjustment. *Reading World*, December 1972, *12*, 85-93. (IV-18)

Evaluates the cloze procedure as a predictor of students' abilities to comprehend social studies materials and the effectiveness of rewriting these materials as a means of improving comprehension among junior high school students.

110. GIBSON, ELEANOR J.; TENNEY, YVETTE J.; BARRON, RODERICK W.; & ZASLOW, MARTHA. The effect of orthographic structure on letter search. *Perception & Psychophysics*, February 1972, *11*, 183-186. (IV-5)

Investigates the effect of orthographic structure on the ability of 76 fifth graders and 76 college students to search for a single-letter target embedded in a context.

111. GOLDBERG, HERMAN K., & SCHIFFMAN, GILBERT B. *Dyslexia: problems of reading disabilities*. New York: Grune & Stratton, 1972. (I)

Reviews under separate chapter headings the research findings on various aspects of dyslexia.

112. GOODACRE, E. J. *Teachers and their pupils' home background*. The Mere, Upton Park, Slough, Bucks, Wales: National Foundation for Educational Research in England and Wales, 1968. (II)

Studies the attitudes of teachers and their professional background and the influence of these on children's progress in learning to read.

113. GOODACRE, E. J. *Reading in infant classes*. The Mere, Upton Park, Slough, Bucks, Wales: National Foundation for Educational Research in England and Wales, 1967. (V-1)

Surveys methods of teaching reading, reading materials, and other facilities used in 100 British infant schools and departments.

114. GOODMAN, LIBBY, & WIEDERHOLT, J. LEE. Predicting reading achievement in disadvantaged children. *Psychology in the Schools*, April 1973, *10*, 181-184. (V-11)

Compares the long-term predictive power of intelligence, readiness, achievement, and visual perception for the future reading performance of a sample of 70 innercity kindergarten and first grade children.

115. GRAEBNER, DIANNE BENNETT. A decade of sexism in readers. *The Reading Teacher*, October 1972, *26*, 52-58. (III-2)

Analyzes and compares the most recent editions and the previous editions of 2 basal reading series as to their portrayal of sex roles in 554 stories.

116. GRANT, CARL A. Black studies materials do make a difference. *The Journal of Educational Research*, May-June 1973, *66*, 400-404. (V-6)

Utilizes a total of 438 grade 3 pupils and 560 grade 6 pupils in a study of the effects of materials upon the self concept, achieve-

ment, and school attendance of black children. Control and experimental classrooms were established.

117. GRICE, JOAN S., & WOLFE, LEE R. Peer versus teacher correction of classwork and selected reading criteria. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 218-227. (V-5)

Studies the differential effects of peer correction versus teacher correction of classwork on the reading achievement of 24 first graders.

118. GRIFFITHS, ANITA [redacted]; GILLEN, JOSEPH F.; & DANKEL, ROBERTA. Leave dyslexics in the classroom. *Academic Therapy*, Fall 1972, 8, 57-65. (V-10)

Describes the results of providing remediation in the regular classroom to 8 first and second graders identified as learning disabled.

119. GROFF, PATRICK. A phonemic analysis of monosyllabic words. *Reading World*, December 1972, *12*, 94-103. (V-9)

Analyzes high-frequency monosyllabic words, organizing them into 5 categories. Categorization is based upon spelling-sound characteristics.

120. GROFF, PATRICK. Sequences for teaching consonant clusters. *Journal of Reading Behavior*, Winter 1971-72, 4, 59-65. (V-9)

Presents data based on spelling and reading difficulty, frequency, and number of words for sequencing consonant cluster instruction.

121. GROFF, PATRICK. Should youngsters find little words in bigger words? *Reading Improvement*, Spring 1973, *10*, 12-16. (V-9)

Analyzes 5,585 larger words to determine if monosyllabic words within them can be pronounced normally without distorting the pronunciation of the original word.

122. GUINAGH, BARRY J., & JESTER, R. EMILE. How parents read to children. *Theory Into Practice*, June 1972, *11*, 171-177. (IV-16)

Reports on data obtained from 2 Parent Child Centers in which 33 black and 17 white parent-child dyads were assessed on the amount of interaction occurring as mothers read to children.

123. GUSZAK, FRANK J., & MILLS, WALLACE R. Preparation of a reading teacher: a program metamorphosis. *Journal of Reading*, March 1973, *16*, 444-448. (II)

Describes a program designed to produce a "diagnostic reading teacher" and the effects on the performance of 85 elementary children identified as having reading problems and 23 kindergarten children.

124. GUTHRIE, JOHN T., & GOLDBERG, HERMAN K. Visual sequential memory in reading disability. *Journal of Learning Disabilities*, January 1972, 5, 41-46. (IV-13)

Compares 81 normal and 43 disabled readers on 3 tests of visual sequential memory and 3 tests of reading to determine the correlation between the 2 types of abilities.

125. GUTHRIE, JOHN T.; GOLDBERG, HERMAN K.; & FINUCCI, JOAN. Independence of abilities in disabled readers. *Journal of Reading Behavior*, Spring 1972, 4, 129-138. (IV-13)

Relates auditory and visual reception, language, and motor coordination to the reading level of 35 children in a summer reading clinic.

126. GUTMAN, JOHNATHAN. Tachistoscopic tests of outdoor ads. *Journal of Advertising Research*, August 1972, 12, 21-27. (III-3)

Tests how speed relates to how much a person can perceive in an ad, and if position differences can be found, using a total of 96 college students.

127. HALL, JOSEPH C., & CHANSKY, NORMAN M. Relationships between selected ability and achievement tests in an economically disadvantaged Negro sample. *Psychological Reports*, June 1971, 28, 741-742. (V-11)

Tests the relation of 3 ability tests administered at the beginning of grade 1 to achievement measures given at the end of the year. A total of 46 black children was involved.

128. HALL, MARYANNE. *The language experience approach for the culturally disadvantaged*. Newark, Delaware: ERIC/CRIER + IRA, 1972. (I)

Includes a review and synthesis of the research on the language experience approach to teaching reading to the culturally different child. A bibliography is included.

129. HAMMILL, DONALD. Training visual perceptual processes. *Journal of Learning Disabilities*, November 1972, 5, 552-559. (I)

Organizes recent research to examine relationships between visual perceptions and visual perception training, and reading comprehension.

130. HAMMILL, DONALD; IANO, RICHARD; MCGETTIGAN, JAMES; & WIEDERHOLT, J. LEE. Retardates' reading achievement in the resource room model: the first year. *Training School Bulletin*, November 1972, 63, 104-107. (VI)

Investigates the reading achievement of 22 EMR students who were integrated into regular grades with supportive help in a resource room.

131. HARDY, MADELINE; STENNETT, R. G.; & SMYTHE, P. C. Auditory segmentation and auditory blending in relation to beginning reading. *The Alberta Journal of Educational Research*, June 1973, *19*, 144-158. (IV-6)

Assesses the development of skills in auditory segmentation and auditory blending in primary school children; studies the relationships between these skills as a function of grade level, type of unit, and length of sequence being segmented or blended, and relates the abilities in auditory segmentation and blending to measures of other subskills involved in beginning reading. The subjects of the study were 81 grade 1 and 45 grade 2 children.

132. HARRIS, ALBERT J., & JACOBSON, MILTON D. *Basic elementary reading vocabularies*. New York: Macmillan, 1972. (V-9)

Develops a vocabulary list for the elementary grades based on 14 recently published textbooks including 6 basal reading series and 2 each in English, social studies, mathematics, and science.

133. HARRISON, GORDON SCOTT. The mass media in native villages of Alaska. *Journalism Quarterly*, Summer 1972, *49*, 373-376. (III-1)

Summarizes findings of a study on the use and impact of various mass media among Alaskan natives.

134. HARTLAGE, LAWRENCE C., & LUCAS, DAVID G. Group screening for reading disability in first grade children. *Journal of Learning Disabilities*, May 1973, *6*, 317-321. (V-10)

Investigates relationships between group screening predictor variables and subsequent reading acquisition of 1,132 first graders taught reading by a linguistic, special alphabet, or look-say method.

135. HARTLAGE, LAWRENCE C., & LUCAS, DAVID G. Predicting reading ability in first grade children. *Perceptual and Motor Skills*, April 1972, 34, 447-450. (V-11)

Uses 44 first graders in the administration of a screening test for measurement of various aspects of reading ability.

136. HARTLAGE, LAWRENCE C.; LUCAS, DAVID G.; & MAIN, WILLIAM H. Comparison of three approaches to teaching reading skills. *Perceptual and Motor Skills*, February 1972, 34, 231-232. (V-5)

Compares the use of linguistic, look-say, and special alphabet approaches to teaching initial reading skills among 814 beginning first grade children of equivalent readiness levels.

137. HEDGES, WILLIAM D., & HARDIN, VERALEE B. Effects of a perceptual-motor program on achievement of first graders. *Educational Leadership Research Supplement*, December 1972, 30, 249-253. (V-5)

Assesses the results of perceptual-motor exercises given to 152 students in 9 first grade classes over a 21-week period.

138. HERIOT, JAMES T.; TAVORMINA, JOSEPH B.; & VAUTRAIN, ROBERT L. The Peabody as a substitute measure of oral reading. *Perceptual and Motor Skills*, June 1973, 36, 1258. (VI)

Describes a modification of the *Peabody Picture Vocabulary Test* as a reading test for children with severe difficulties with spoken language.

139. HERNANDEZ, NORMA G. Variables affecting achievement of middle school Mexican-American students. *Review of Educational Research*, Winter 1973, 43, 1-39. (I)

Reviews the literature dealing with the variables relative to the learning of middle-school Mexican-American children. Divides the review into 4 categories: socioeconomic, physical, psychological, and cultural. Recommendations for curriculum design and instruction are also included.

140. HEUSSENSTAMM, F. K. Activism in adolescence: an analysis of the high school underground press. *Adolescence*, Fall 1971, 6, 317-336. (III-2)

Focuses on an analysis of 17 issues of one high school underground paper.

141. HILL, WALTER. Characteristics of secondary reading: 1940-1970. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference*, 1971. Pp. 20-29. (I)

Describes notable developments in secondary reading programs from 1940-1970.

142. HISLOP, MARGARET J., & KING, ETHEL M. Application of phonic generalizations by beginning readers. *The Journal of Educational Research*, May-June 1973, 66, 405-412. (V-5)

Investigates the ability of children in grades 1, 2, and 3 to apply selected phonic generalizations in reading nonsense words. Uses 15 boys and 15 girls at each grade level.

143. HOCKMAN, CAROL H. Black dialect reading tests in the urban elementary school. *The Reading Teacher*, March 1973, 26, 581-588. (IV-15)

Studies the effects of dialectal changes in a reading comprehension test on the performance of 128 black and 138 white third, fourth, and fifth graders.

144. HODGE, MILTON H., & PENNINGTON, FLORRIE M. Some studies of word abbreviation behavior. *Journal of Experimental Psychology*, May 1973, *98*, 350-361. (IV-8)

Explores the usefulness of 3 principles of abbreviation and examines the effects of certain stimulus variables. Subjects were undergraduates.

145. HOLDEN, MARJORIE H., & MACGINITIE, WALTER H. Children's conceptions of word boundaries in speech and print. *Journal of Educational Psychology*, December 1972, 63, 551-557. (IV-12)

Investigates 84 kindergarten children's conceptions of word boundaries in speech and print.

146. HOLDING, DENNIS H. Brief visual memory for English and Arabic letters. *Psychonomic Science*, August 1972, 28, 241-242. (IV-5)

Uses 8 American undergraduates and 8 Arab university students to test for partial and for whole recall of letter arrays, both in English and in Arabic script.

147. HUNTER, EDNA J., & JOHNSON, LAVERNE C. Developmental and psychological differences between readers and nonreaders. *Journal of Learning Disabilities*, December 1971, 4, 572-577. (IV-13)

Compares 20 boys with reading disabilities with 20 matched controls to examine significant differences.

148. HUNTER, EDNA J.; JOHNSON, LAVERNE C.; & KEEFE, F. BARRY. Electrodermal and cardiovascular responses in nonreaders. *Journal of Learning Disabilities*, April 1972, 5, 187-197. (IV-1)

Compares the autonomic response patterns of 20 male nonreaders, ranging in age from 7-11 to 11-4 with those of 20 matched controls.

149. IDSTEIN, PETER, & JENKINS, JOSEPH R. Underlining versus repetitive reading. *The Journal of Educational Research*, March 1972, 65, 321-323. (IV-9)

Uses university seniors in 2 experiments designed to determine whether underlining was superior to repetitive reading on a completion test following a delayed review period. There were 76 subjects in the first study, 87 in the second.

150. INGRAM, T. T. S.; MASON, A. W.; & BLACKBURN, I. A retrospective study of 82 children with reading disability. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 173-195. (IV-13)

Investigates 82 children showing mild, moderate, or severe underachievement in reading or spelling, and its linkage to underlying brain function. Average age of the subjects was 9-10 to 10-4.

151. JACKSON, MERRILL STANLEY. Modes of adaptation to the first confrontation with English orthography in the visual modality. *Journal of Learning Disabilities*, January 1972, 5, 29-34. (IV-5)

Examines responses to differences in *b* and *d* when seen for the first time by 21 kindergartners and 22 native New Guinean children.

152. JACOBSON, J. ZACHARY. Effects of association upon masking and reading latency. *Canadian Journal of Psychology*, March 1973, 27, 58-69. (IV-4)

Uses undergraduates in 4 experiments to assess the effects of association upon masking and reading latency.

153. JANSKY, JEANETTE, & DE HIRSCH, KATRINA. *Preventing reading failure*. New York: Harper & Row, 1972. (IV-13)

Follows 401 children from kindergarten through the end of grade 2 in presenting data on an epidemiological approach to predicting reading failure. A battery of 19 tests was given in kindergarten and data on another 12 measures were collected in grade 2.

154. JANZ, MARGARET L., & SMITH, EDWIN H. Students' reading ability and the readability of secondary school subjects. *Elementary English*, April 1972, 49, 622-624. (V-9)

Compares the readability levels of assigned textbooks in content areas to the reading ability of 590 eighth, ninth, and tenth grade students in 5 schools.

155. JENSEN, A. R. Personality and scholastic achievement in three ethnic groups. *The British Journal of Educational Psychology*, June 1973, 43, 115-125. (IV-14)

Reports on the fall administration of a personality scale to 2,200 white, black, and Mexican-American children, ages 9 to 13, and correlates this with academic performance in the spring.

156. JERROLDS, BOB W. Effects of advance organizers in reading for the retention of specific facts. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 23-29. (IV-9)

Examines the effects upon retention of specific facts of an advance organizer and a modified advance organizer with and without instruction in a study involving 84 ninth graders.

157. JERROLDS, BOB W.; CALLAWAY, BYRON; GWALTNEY, WAYNE K. Comparison of the *Slosson Intelligence Test* and *WISC* scores of subjects referred to a reading clinic. *Psychology in the Schools*, October 1972, 9, 409-410. (IV-2)

Assesses the validity of the *Slosson Intelligence Test* for use with students referred to a university reading clinic, based on 51 subjects.

158. JESTER, R. EMILE. Intellectual stimulation of the preschooler and its implications in the development of reading skills. In Joseph P. Kender (Ed.), Reading: the tried and the new. *Twentieth Annual Reading Conference* at Lehigh University, 1972. Pp. 61-69. (V-4)

Discusses the implications of an infant stimulation program for the development of reading skills in a study of children from 0 to 3 years.

159. JOHNS, JERRY. Children's concepts of reading and their reading achievement. *Journal of Reading Behavior*, Fall 1972, 4, 56-57. (IV-14)

Examines the relationship between the reading concepts of 53 fourth graders and their reading achievement.

160. JOHNS, JERRY L. What do innercity children prefer to read? *The Reading Teacher*, February 1973, 26, 462-467. (IV-17)

Surveys reading preferences for illustrations, settings, and characters of 597 innercity intermediate grade children.

161. JOHNSON, DALE D., & BARRETT, THOMAS C. Johnson's Basic Vocabulary for Beginning Reading and current basal readers: are they compatible? *Journal of Reading Behavior*, Fall 1971-72, 4, 1-11. (V-9)

Determines the frequency of occurence of the 306 words on the basic vocabulary list in the first and second grade materials of 10 basal programs.

162. JOHNSON, DALE D.; SMITH, RICHARD J.; & JENSEN, KENNETH L. Primary children's recognition of high-frequency words. *The Elementary School Journal*, December 1972, 73, 162-167. (IV-8)

Uses an updated basic word list to test the word knowledge of 210 first and second graders.

163. JOHNSON, PAUL E. Experimental analysis of written instruction. *Verbal Learning Research and the Technology of Written Instruction*, 1971, 216-237. (I)

Discusses the variables to be considered in a study of written language and analyzes several studies which have employed the variables. Includes linguistic, subject-matter, and dependent variables.

164. JOHNSON, PAULA B., & SEARS, DAVID O. Black invisibility, the press and the Los Angeles riot. *American Journal of Sociology*, January 1971, 76, 698-721. (III-2)

Studies the coverage of blacks in 2 major Los Angeles metropolitan newspapers from 1892 to 1968.

165. JOHNSON, RONALD E. Meaningfulness and the recall of textual prose. *American Educational Research Journal*, Winter 1973, *10*, 49-58. (IV-9)

Relates meaningfulness of textual prose to the ability of college students to recall linguistic subunits, immediately and after 7 days.

166. JONES, JOHN PAUL. *Intersensory transfer, perceptual shifting, modal preference, and reading*. Newark, Delaware: ERIC/CRIER + IRA, 1972. (I)

Includes a review and synthesis of literature on the effects of intersensory transfer, perceptual shifting, modal preference on reading. Includes a bibliography.

167. JURGENS, SISTER JEANNE MARIE. Perception of lexical and structural ambiguity by junior and senior high school students. *Elementary English*, April 1972, 49, 497-501. (IV-7)

Tests the ability of 90 seventh, ninth, and eleventh grade students to perceive lexical and structural ambiguity.

168. JUSTIN, NEAL. Mexican-American reading habits and their cultural basis. *Journal of Reading*, March 1973, *16*, 467-473. (III-4)

Assesses cultural similarities and differences between Anglos and Mexican-Americans especially with regard to reading-media habits. Questionnaires were given to 168 male Mexican-American seniors and 209 male Anglo seniors.

169. KANE, MICHAEL B. *Minorities in textbooks: a study of their treatment in social studies texts.* Chicago: Quadrangle Books, 1970. (III-2)

Analyzes the treatment of minority groups in 45 junior and senior high school social studies texts with particular emphasis on what has occurred since 1960.

170. KATZ, ELIHU; GUREVITCH, MICHAEL; & HAAS, HADASSAH. On the use of the mass media for important things. *American Sociological Review*, April 1973, 38, 164-181. (III-1)

Ranks the mass media with respect to their perceived helpfulness in satisfying clusters of needs arising from social roles and individual dispositions by interviewing 1,500 Israeli respondents.

171. KATZ, LEONARD, & WICKLUND, DAVID A. Letter scanning rate for good and poor readers in grades two and six. *Journal of Educational Psychology*, August 1972, 63, 363-367. (IV-13)

Assesses the ability of 15 good and 15 poor readers in grade 6 and 12 good and 12 poor readers in grade 2 to scan visually a row of letters for the presence or absence of a predetermined key letter.

172. KENDER, JOSEPH P. Is there really a *WISC* profile for poor readers? *Journal of Learning Disabilities*, August/September 1972, 5, 397-400. (I)

Reviews 8 studies which investigate the performance of poor readers in the *WISC*.

173. KIESLING, HERBERT J. Reading performance of disadvantaged children: cost effectiveness of educational inputs. *Education and Urban Society*, November 1972, 5, 91-103. (V-1)

Summarizes results of a study of a 6 per cent sample of California Title I projects concerning students in grades 2 through 5; relates instruction time by specialists and paraprofessionals, planning time, and use of resource facilities to improvement in reading performance.

174. KING, DAVID J. Presentation time and method of reading in the learning of connected discourse. *Journal of General Psychology*, April 1973, 88, 283-289. (IV-10)

Investigates the joint influences of method of reading and total presentation time on the recall of a short passage. A total of 90 college students were used as subjects.

175. KING, ETHEL M., & FRIESEN, DORIS T. Children who read in kindergarten. *The Alberta Journal of Educational Research*, September 1972, *18*, 147-161. (V-3)

Relates family background differences and various skills to early reading in a study of 31 kindergarten readers and 31 non-kindergarten readers.

176. KINGSTON, ALBERT J.; WEAVER, WENDELL W.; & FIGA, LESLIE E. Experiments in children's perceptions of words and word boundaries. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 91-99. (IV-12)

Explores ability of several groups of first graders to locate the boundaries of aural and printed words in 5 experiments.

177. KIRBY, EDWARD A.; LYLE, WILLIAM; & AMBLE, BRUCE R. Reading and psycholinguistic processes of inmate problem readers. *Journal of Learning Disabilities*, May 1972, 5, 295-298. (IV-3)

Examines the predictability of the subtests of the *Illinois Test of Psycholinguistic Abilities* for 24 prison inmates whose reading levels were low.

178. KLANDERMAN, JOHN, & GREGORY, GERALD. A study of the effects of a kindergarten perceptual-motor development program. *Illinois School Research*, Winter 1972, 8, 6-11. (IV-5)

Explores the effects of a structured, sequential perceptual-motor program on reading readiness for one-half of 2 kindergarten classes.

179. KLEES, MARIANNE, & LEBRUN, ARIANE. Analysis of the figurative and operative processes of thought of 40 dyslexic children. *Journal of Learning Disabilities*, August/September 1972, 5, 389-396. (IV-13)

Examines thought processes of 40 dyslexic children, age 7 to 11 years.

180. KLINE, CARL L., & LEE, NORMA. A transcultural study of dyslexia: analysis of language disabilities in 277 Chinese children simultaneously learning to read and write in English and in Chinese. *The Journal of Special Education*, Spring 1972, 6, 9-26. (VI)

Investigates the incidence of dyslexia in 277 Chinese grade school pupils who were learning to read in both Chinese and English.

181. KNIGHT, LESTER NEAL. Oral-aural language instruction and reading achievement of selected Spanish-speaking children. *California Journal of Educational Research*, September 1972, 23, 188-197. (V-5)

Evaluates the effect of 3 treatments on the reading achievement of second and third grade Spanish-speaking pupils. The 3 treatments were oral-aural English, oral-aural Spanish, and non-oral-aural.

182. KOENKE, KARL. Shaping English teachers' attitudes about reading instruction. *Illinois School Research*, Fall 1972, 9, 5-11. (II)

Assesses the effect of teaching courses and student teaching on the attitudes toward reading of 74 English majors and teachers.

183. KOZIEY, P. W., & BRAUER, J. H. Using mental practice to improve reading performance. *The Alberta Journal of Educational Research*, September 1972, 18, 190-195. (IV-13)

Evaluates the result of mental and physical practice on vocabulary, comprehension, and reading rate. The subjects were 76 grade 8 boys and girls.

184. KRUG, MARK M. Freedom and racial equality: a study of "revised" high school history texts. *School Review*, May 1970, 78, 297-354. (III-2)

Concentrates on 5 widely used history textbooks revised within the past 5 years and analyzes selected topics for treatment of blacks.

185. KULHAVY, RAYMOND W. Effects of embedding orienting stimuli in a prose passage. *Psychonomic Science*, August 1972, 28, 213-214. (IV-7)

Tests the effects of embedding or deleting critical statements in a 2,305-word prose passage, read by 80 undergraduate volunteers.

186. LADAS, HAROLD. The mathemagenic effects of factual review questions on the learning of incidental information: a critical review. *Review of Educational Research*, Winter 1973, 43, 71-82. (I)

Analyzes and critiques several studies on mathemagenic behavior from the statistical viewpoint as well as from the standpoint of other research design procedures.

187. LAISHLEY, JENNIE. Can comics join the multi-racial society? *The Times Educational Supplement*, No. 3000, November 24, 1972. P. 4. (III-2)

Takes 15 different comics published between January and June, 1971, and studies the presentation of non-white characters in them.

188. LANE, HARLAN, & GROSJEAN, FRANCOIS. Perception of reading rate by speakers and listeners. *Journal of Experimental Psychology*, February 1973, 97, 141-147. (IV-10)

Studies 12 graduate students for the purpose of determining how a reader and his listeners perceive the rate of oral reading, and what elements affect that perception of rate.

189. LANSDOWN, RICHARD, & DAVIS, VALERIE. The language of reading and the ESN child. *Reading*, June 1972, 6, 21-24. (VI)

Uses 30 children attending a British school for the educationally subnormal and 24 infants school children in a study investigating various concepts related to reading held by the subjects.

190. LAWRENCE, D. The effects of counselling on retarded readers. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 311-320. (V-10)

Hypothesizes that it is possible to improve a retarded reader's level of reading attainment by allowing regular sessions of counselling. A total of 12 children each from 4 different schools were given 4 different treatments and their gains compared.

191. LEDERMAN, EDWARD, & BLAIR, JOHN RAYMOND. Comparison of the level and predictive validity of Preschool Attainment Record ratings obtained from teachers and mothers. *Psychology in the Schools*, October 1972, 9, 392-395. (V-4)

Compares the ratings of the mother and teachers of 28 5 year olds on the PAR to determine discrepancies between the 2 and to determine the validity of the ratings as predictors of school readiness.

192. LEICHT, KENNETH L., & CASHEN, VALJEAN M. Type of highlighted material and examination performance. *The Journal of Educational Research*, March 1972, 65, 315-316. (IV-7)

Distinguishes between 4 groups of 41 students each from a general psychology class in terms of type of printed material each received, dealing with the absence of underlining, the underlining in turn of principles, or trivial statements.

193. LESSLER, KEN, & BRIDGES, JUDITH S. The prediction of learning problems in a rural setting: can we improve on readiness tests? *Journal of Learning Disabilities*, February 1973, 6, 90-94. (V-11)

Uses standard reading readiness tests and various other measures to assess prediction of achievement of 293 children at the end of first and second grade.

194. LEVINE, MAUREEN, & FULLER, GERALD. Psychological, neuropsychological, and educational correlates of reading deficit. *Journal of Learning Disabilities*, November 1972, 5, 563-571. (IV-13)

Investigates performance of 44 children with reading disability on psychoneurological, psychological, and educational variables.

195. LEVY, BEATRICE K. Is the oral language of inner city children adequate for beginning reading instruction? *Research in the Teaching of English*, Spring 1973, 7, 51-60. (IV-15)

Presents descriptive data of the oral language of 20 black disadvantaged children.

196. LIBKUMAN, TERRY M. Word frequency and pronunciation and the verbal-discrimination learning of nonretarded and retarded children. *American Journal of Mental Deficiency*, November 1972, 77, 322-327. (VI)

Investigates the variables of pronunciation and word frequency using 64 nonretarded and 64 retarded children.

197. LIEBLER, ROBERTA. Reading interests of black and Puerto Rican, innercity, high school students. *Graduate Research in Education and Related Disciplines*, Spring-Summer 1973, 23-43. (III-4)

Administers a questionnaire designed to determine the reading interests of innercity black and Puerto Rican eleventh and twelfth grade students. A total of 170 usable questionnaires were included in the analysis.

198. LILLY, M. STEPHEN, & KELLEHER, JOHN. Modality strengths and aptitude-treatment interaction. *The Journal of Special Education*, Spring 1973, 7, 5-13 (IV-3)

Develops a test of visual and auditory memory and relates it to the reading and listening performance of 57 learning disabled children between 8 and 12 years old.

199. LITTLE, ALAN; MABEY, CHRISTINE; & RUSSELL, JENNIFER. Class size, pupil characteristics and reading attainment. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 86-93. (V-12)

Discusses a survey carried out in Britain with 9 year old children to test the effect class size has on reading achievement.

200. LIU, HAN C., & GUNARATNE, SHELTON A. Foreign news in two Asian dailies. *Gazette*, 1972, *18*, 37-41. (III-2)

Compares the foreign news coverage of 2 elite Asian dailies using a random sampling of 12 issues of each.

201. LIVINGSTON, SAMUEL A. "Verbal overload" and achievement tests: a replication. *American Educational Research Journal*, Spring 1973, *10*, 155-162. (V-11)

Examines effect of "verbal overload" on the multiple choice test scores of 372 eighth graders.

202. LOHNES, PAUL R., & GRAY, MARIAN M. Intellectual development and the Cooperative Reading Studies. *Reading Research Quarterly*, Fall 1972, *8*, 52-61. (IV-2)

Examines correlational analyses of the relation of 5 beginning reading instruction methods to the achievement of 3,950 pupils in the USOE Cooperative Reading Studies second grade phase data.

203. LOHNES, PAUL R., & GRAY, MARIAN M. Intelligence and the Cooperative Reading Studies. *Reading Research Quarterly*, Spring 1972, 7, 466-476. (IV-2)

Re-examines data from the USOE Cooperative Reading Studies, second-grade phases, using the readiness tests and first and second grade achievement tests for 3,956 pupils.

204. LONG, BARBARA H., & HENDERSON, EDMUND H. Children's use of time: some personal and social correlates. *The Elementary School Journal*, January 1973, 73, 193-199. (IV-17)

Uses a sample of 150 grade 5 children and has them maintain a time record of activities over a 14-day period.

205. LOWELL, ROBERT E. Reading readiness factors as predictors of success in first grade reading. *Journal of Learning Disabilities*, December 1971, 4, 563-567. (V-11)

Reports on the predictive validity of several measures of reading readiness in a study of 200 beginning first graders.

206. LYMAN, HELEN HUGUENOR. The library reading program for the adult new reader. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 82-88. (III-4)

Describes the adult new reader based on interviews with 479 persons from large city ghettos. In addition to data on sex, race, education, and income, information on reading materials is presented.

207. LYTTON, HUGH. Some psychological and sociological characteristics of 'good' and 'poor' achievers in remedial reading groups: clinical case studies. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 264-278. (IV-13)

Examines the achievements of 2 groups of remedial reading pupils matched for sex, mean age, and mean non-verbal IQ. Initial CA was 8.7 for the good readers and 8.4 for the poor readers.

208. MacKinnon, G. E., & McCarthy, Nancy A. Verbal labelling, auditory-visual integration, and reading ability. *Canadian Journal of Behavioral Science*, April 1973, 5, 124-132. (IV-3)

Examines performance of 32 second grade boys on a verbal labelling (paired associate) and on auditory-visual integration tasks then analyzes relationships among these scores, reading, and IQ scores.

209. Malmquist, Eve. Sweden. In John Downing (Ed.), *Comparative reading*. New York: Macmillan, 1973, Pp. 466-471. (I)

Reviews research on various aspects of teaching reading in Sweden.

210. Martin, Clessen J., & Harndon, Mary Anne. Development of telegraphic prose based on a random word deletion scheme. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*. 1972. Pp. 30-34. (IV-18)

Determines the effects of 10 and 30 per cent random word deletion levels on the comprehension of 66 college students as assessed by a specially designed set relations test.

211. Maxwell, Martha J. Cognitive aspects of skimming: evidence and implications. *Reading World*, May 1973, *12*, 229-238. (IV-11)

Uses *skapa*, a paradigm for analyzing the cognitive aspects of skimming, with 30 college students as well as other varied groups.

212. Maxwell, Martha J. Results of the survey of the literature on methods and materials in reading. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 203-211. (IV-11)

Surveys literature on methods and materials used in reading instruction in the US. A total of 241 studies were identified as related to methods of beginning reading instruction.

213. Maxwell, Martha J. Skimming and scanning improvement: the needs, assumptions and knowledge base. *Journal of Reading Behavior*, Winter 1972-73, 5, 47-59.(I)

Presents the results of a series of studies conducted in the development of a skimming and scanning improvement program. Most of studies used samples of college students.

214. McCLELLAN, DORINDA ANN. Reading ability of junior college students and readability of assigned texts. In Frank P. Greene (Ed.), Reading: the right to participate. *Twentieth Yearbook of the National Reading Conference*, 1971. Pp. 348-354. (V-9)

Presents data comparing the readability levels of textbooks and the reading ability of the students at one junior college.

215. McCOMBS, MAXWELL E., & SHAW, DONALD L. The agenda-setting function of mass media. *Public Opinion Quarterly*, Summer 1972, 36, 176-187. (III-1)

Interviews 100 respondents during the 1968 presidential campaign and does a content analysis of the mass media serving them to determine the influence of the media on setting the agenda of the campaign issues and influencing attitudes.

216. McDOWELL, EUGENE E., III, & YOUTH, ROBERT ALLAN. Effects of discrimination pretraining upon intralist similarity phenomenon in developing beginning reading skills. *Perceptual and Motor Skills*, June 1973, 36, 1039-1045 (IV-5)

Presents 20 kindergarten children with lists of words of high graphic similarity and 20 with words of low graphic similarity and trains half of each group in discriminating the words. Results of rate of learning, word recognition, and generalization are given.

217. McGAW, BARRY, & GROTELUESCHEN, ARDEN. Direction of the effect of questions in prose material. *Journal of Educational Psychology*, December 1972, 63, 580-588. (IV-9)

Investigates the facilitative effect of questions inserted at intervals in prose materials. Subjects were 140 undergraduates.

218. McKEEVER, WALTER F., & GILL, KATHLEEN M. Visual half-field differences in the recognition of bilaterally presented single letters and vertically spelled words. *Perceptual and Motor Skills*, June 1972, 34, 815-818. (IV-1)

Examines tachistoscopic recognition of bilaterally presented single letters and vertically spelled words as a function of the lateral visual-half-field placement of the stimuli using college students.

219. McLEOD, J.; MARKOWSKY, M. D.; & LEONG, C. K. A follow-up of early entrants to elementary schools. *The Elementary School Journal*, October 1972, 73, 10-19 (V-3)

Presents follow-up data on the achievement and social adjustment of 32 early age school entrants and compares their progress with that of children rejected for early entrance and with control group children.

220. McNELLY, JOHN T., & MOLINA, JULIO R. Communication, stratification and international affairs information in a developing urban society. *Journalism Quarterly*, Summer 1972, 49, 316-325, 339. (III-1)

Interviews 632 males, each head of his household in the Lima, Peru, metropolitan area to determine their informational level in relation to their mass and interpersonal communications behaviors.

221. McNINCH, GEORGE. Paradigmatic language training as a method of increasing reading achievement. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 100-109. (IV-7)

Investigates effect of training in paradigmatic language responses on the reading achievement of 45 sixth graders.

222. McNINCH, GEORGE; PALMATIER, ROBERT; & RICHMOND, MARK. Auditory perceptual testing of young children. *Journal of Reading Behavior*, Spring 1972, 4, 120-128. (IV-6)

Identifies 4 auditory perceptual skills and establishes their independence on 3 populations of 20 five year olds, 66 rural first graders, and 33 children ending first grade.

223. McNINCH, GEORGE, & RICHMOND, MARK. Auditory perceptual tasks as predictors of first grade reading success. *Perceptual and Motor Skills*, August 1972, 35, 7-13 (IV-6)

Investigates the predictive ability of an experimenter-designed test of auditory perceptual skills by administering the test and a group intelligence test to 55 beginning first graders and later assessing their reading achievement by means of a standardized reading test.

224. MESSMORE, PETER B. Multi-ethnic reading texts: the role of inferred story-character identification and reading comprehension. *Journal of Reading Behavior*, Spring 1973, 5, 126-133. (IV-14)

Examines the relationship between molar and specific reading comprehension and inferred identification with 121 black and white third grade children.

225. MILLER, LEON K. Letter recognition: effects of interitem similarity and report requirements. *Perception & Psychophysics*, March 1972, *11*, 252-256. (IV-3)

Studies the effects of auditory and visual similarity and position of letter on the letter recognition ability of 78 college students in 2 experiments.

226. MILLER, LYLE L. Speed reading in the seventies. *Educational Leadership*, April 1973, *30*, 623-627. (I)

Discusses the issue of speed reading.

227. MILLER, WILMA H. Predicting achievement in first-grade reading and writing. *Illinois School Research*, Spring 1972, *8*, 17-23. (V-11)

Reports a pilot study to evaluate the predictive ability of various instruments administered to 23 kindergarten children.

228. MISLTER-LACHMAN, JANET L. Levels of comprehension in processing of normal and ambiguous sentences. *Journal of Verbal Learning and Verbal Behavior*, October 1972, *11*, 614-623. (IV-9)

Investigates levels of comprehension using 3 different tasks. Twenty undergraduates were given 432 sentences with varying syntactic complexity.

229. MOLLACH, FRANCIS L. The use of cloze procedure to study the reading capabilities of community college freshmen. *Research in the Teaching of English*, Spring 1972, *6*, 20-35. (V-9)

Analyzes the reading capabilities of freshman English students using a cloze procedure.

230. MOORE, TIMOTHY E. Speeded recognition of ungrammaticality. *Journal of Verbal Learning and Verbal Behavior*, October 1972, *11*, 550-560. (IV-7)

Studies the validity of a theoretical hierarchy of grammatical categories using 24 undergraduates in 2 experiments.

231. MORASKY, ROBERT L. Eye movements as a function of adjunct question placement. *American Educational Research Journal*, Spring 1972, *9*, 251-261. (IV-11)

Investigates the effects of differential placement of questions in written material on the reading time and eye movements of 30 college students.

232. MORENCY, ANNE, & WEPMAN, JOSEPH M. Early perceptual ability and later school achievement. *The Elementary School Journal*, March 1973, *73*, 323-327. (IV-3)

Studies the relationship between auditory and visual perception tests administered in grade 1 and achievement in grades 4, 5, and 6 for 120 children.

233. MORRIS, MONICA B. Newspapers and the new feminists: black out as social control? *Journalism Quarterly*, Spring 1973, *50*, 37-42. (III-2)

Performs a content analysis of newspapers in England and Los Angeles to determine if information about the women's movement has been blacked out.

234. MUELLER, DORIS E. Teacher questioning practices in reading. *Reading World*, December 1972, *12*, 136-145. (V-9)

Analyzes the kinds of questions found in 2 basal teachers guides and asked by 8 innercity fourth grade teachers and examines differences in teachers' questions for average and below average readers.

235. MYROW, DAVID L., & ANDERSON, RICHARD C. Retroactive inhibition of prose as a function of the type of test. *Journal of Educational Psychology*, August 1972, 63, 303-308. (IV-9)

Examines retroactive inhibition of textbook-style prose using completion and multiple choice tests. Subjects were 174 high school students.

236. NALVEN, FREDRIC B., & AUGUSTE, JOANNE. How lasting are the effects of i.t.a. vs. TO training in the development of children's creative writing? *Research in the Teaching of English*, Spring 1972, 6, 17-19. (V-6)

Assesses the long-range effects of i.t.a. training over TO training on creative writing using a total of 88 fourth graders.

237. NESVOLD, KARL J. Cloze procedure correlation with perceived readability. *Journalism Quarterly*, Fall 1972, 49, 592-594. (IV-18)

Studies the relationship between readers' perceived difficulty of materials and cloze test scores from college students who read passages from one of 10 magazines and compares them to ratings on "SMOG" and a computerized formula.

238. NEVILLE, DONALD, & VANDEVER, THOMAS R. Decoding as a result of synthetic and analytic presentation for retarded and non-retarded children. *American Journal of Mental Deficiency*, March 1973, 77, 533-537. (VI)

Compares the ability of 30 mentally retarded and 30 non-retarded children who were paired according to mental age to learn a list of high frequency words written in a continued alphabet.

239. NEWMAN, ANABEL P. Later achievement study of pupils underachieving in reading in first grade. *Reading Research Quarterly*, Spring 1972, 7, 477-508. (V-10)

Describes follow-up study of achievement of 230 fifth and sixth graders originally identified as underachievers in a first grade study.

240. NEWMAN, DAVID. Perceptual versus phonics training. *Academic Therapy*, Fall 1972, 8, 15-20. (V-10)

Conducts an investigation into the relative effectiveness of perceptual training and phonics training for use with remedial reading. Subjects were 80 pupils ranging in age from 8 to 12.

241. NEWMAN, J. D., & LAX, BERNARD. Evaluation of closed circuit TV reading systems for the partially sighted. *Journal of the American Optometric Association*, December 1972, 43, 1362-1366. (VI)

Assesses use of closed circuit TV reading systems with 85 low-vision patients.

242. NILSEN, ALLEEN PACE. Women in children's literature. *College English*, May 1971, 37, 918-926. (III-2)

Discusses the image of women presented in 80 picture books which were winners and runners-up for the Caldecott Award over the last 20 years.

243. NODINE, CALVIN F., & STEUERLE, NORMA LANG. Development of perceptual and cognitive strategies for differentiating graphemes. *Journal of Experimental Psychology*, February 1973, 97, 158-166. (IV-5)

Compares the eye movements of 12 children from each of kindergarten, first grade, and third grade during the differentiation of matched and unmatched letter pairs.

244. NOELKER, ROBERT W., & SCHUMASKY, DONALD A. Memory for sequence, form, and position as related to the identification of reading retardates. *Journal of Educational Psychology*, February 1973, 64, 22-25. (VI)

Compares the performance of 24 normal and 24 retarded readers on 3 memory tasks: sequencing, memory for form, and memory for position.

245. NOLEN, PATRICIA S. Reading nonstandard dialect materials: a study at grades two and four. *Child Development*, September 1972, 43, 1092-1097. (IV-15)

Examines the reading recall scores from 156 second and fourth grade children when presented with 3 reading selections. The passages and questions were a non-standardized reading passage in black dialect, a standardized passage in black dialect, and a standardized passage in standard English.

246. NORFLEET, MARY ANN. The Bender-Gestalt as a group screening instrument for first grade reading potential. *Journal of Learning Disabilities*, June/July 1973, 6, 383-388. (V-11)

Explores the use of the Bender-Gestalt as a predictive measure of first grade reading performance in a study of 311 beginning first graders.

247. O'DONNELL, C. MICHAEL, & RAYMOND, DOROTHY. Developing reading readiness in the kindergarten. *Elementary English*, May 1972, *49*, 768-771. (V-4)

Describes a study of 2 groups of kindergarten children using a conceptual-language program and a basal reader workbook approach to reading readiness.

248. OHAVER, ALLAN ROY. A comparison study of semantic and syntactic cueing by low reading performance college freshmen. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 110-118. (IV-10)

Investigates syntactic and semantic cueing used in oral reading of 30 low reading performance college freshmen.

249. OHNMACHT, FRED W., & FLEMING, JAMES T. Cloze and closure: a second analysis. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 35-44. (IV-18)

Examines relationship of flexibility and speed of closure of 92 college students with cloze tasks using structural, lexical, concrete, and abstract deletion strategies, compared to performances of high school students.

250. OLIVER, PETER R.; NELSON, JACQUELYN M.; & DOWNING, JOHN. Differentiation of grapheme-phoneme units as a function of orthography. *Journal of Educational Psychology*, October 1972, *63*, 487-491. (IV-4)

Examines the ability of 20 male and 20 female kindergarten children to visually differentiate the graphemic structure of words, using 4 different orthographies.

251. OLLER, JOHN W., JR.; BOWEN, J. DONALD; DIEN, TON THAT; & MASON, VICTOR W. Cloze tests in English, Thai, and Vietnamese: native and non-native performance. *Language Learning*, June 1972, *22*, 1-15. (IV-18)

Compares response types of native and non-native speakers on a cloze test using twelfth grade students: 122 Thai, 115 Vietnamese, and 35 American.

252. OLLILA, LLOYD O., & OLSON, JAMES H. The effect on learning rate of pictures and realia in the presentation of words to kin-

dergarteners. *The Journal of Educational Research*, March 1972, 65, 312-314. (V-3)

Investigates the effectiveness of 3 different methods of presenting new words to 3 groups of kindergartners who are beginning to recognize words. Uses analysis of variance procedures to determine significant differences between either word, word-picture, or word-object teaching method.

253. OTTO, WAYNE; BARRETT, THOMAS C.; SMITH, RICHARD J.; DULIN, KENNETH L.; & JOHNSON, DALE D. with the assistance of Smith, Kenneth M.; & Smith, Constance A. Summary and review of investigations relating to reading, July 1, 1971 to June 30, 1972. *The Journal of Educational Research*, April 1973, 66, 338-362. (I-1)

Summarizes research studies related to reading categorized under sociology, psychology, physiology, and the teaching of reading.

254. PAIVIO, ALLAN, & BEGG, IAN. Imagery and comprehension latencies as a function of sentence concreteness and structure. *Perception and Psychophysics*, December 1971, *10*, 408-412. (IV-7)

Examines the relation between latency of imagery and comprehension of sentences varying in meaning and syntax in 2 experiments using 60 college students.

255. PATTERSON, HARRY O. The role of communication skills in the pre-EM program at General Motors Institute. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 109-117. (V-8)

Describes the effect of a communication skills component of a training program for 53 students enrolled in a special pre-freshman program.

256. PEISER, ANDREW C. Populism in high school textbooks. *Social Education*, April 1973, 37, 302-309, 316. (III-2)

Determines whether populism is accurately presented as a topic in 9 widely used current American history high school texts.

257. PERTZ, DORIS L., & BROWN, OZEAL SHYNE. An NDEA institute promotes change. *The Reading Teacher*, October 1972, 26, 25-31. (II)

Assesses changes among 34 reading specialists who attended an institute for advanced study in reading.

258. PETERSON, JOE; PETERS, NAT; & PARADIS, ED. Validation of the cloze procedure as a measure of the readability with high

school, trade school, and college populations. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 45-50. (IV-18)

Attempts to identify a cloze percentage score that corresponds to instructional level for high school juniors, vocational and technical school students, and college students based on 176 subjects.

259. PHILIPCHALK, R. P. Thematicity abstractness, and the long-term recall of connected discourse. *Psychonomic Science*, June 25, 1972, 27, 361-362. (IV-7)

Asks 65 college students to recall, immediately and after 2 weeks, the words read in concrete or abstract paragraphs presented in thematic (English word order) or random word order conditions.

260. PHILLIPS, GEORGE OLIVER, SR. The relative effectiveness of three instructional approaches upon the reading, study habits and attitudes, and academic performance of disadvantaged black college freshmen. *Reading World*, October 1972, *12*, 25-40. (V-8)

Investigates the relative effectiveness of 3 approaches to teaching reading and study skills to 102 disadvantages black college students.

261. PIKULSKI, JOHN J. A comparison of figure drawings and *WISC* IQ's among disabled readers. *Journal of Learning Disabilities*, March 1972, 5, 156-159. (IV-13)

Assesses the relationship between IQ scores from 2 systems for scoring figure drawings as compared to performance on the *WISC* in a population of 50 boys of elementary school age who had been classified as disabled readers.

262. POSNER, MICHAEL I.; LEWIS, JOE L.; & CONRAD, CAROL. Component processes in reading: a performance analysis. In Kavanagh & Mattingly (Eds.), *Language by ear and by eye*. Cambridge, Massachusetts: The M.I.T. Press, 1972, Pp. 159-192. (I)

Reviews techniques and results of experimental research leading to an elucidation of the component processes in reading.

263. POWELL, ARNOLD, & PETERS, RAY GARY. Semantic clues in comprehension of novel sentences. *Psychological Reports*, June 1973, 32, 1307-1310. (IV-7)

Uses self-embedded sentences containing 3 relative clauses to determine the influence of semantic clues on understanding the sentence structure by college students.

264. PRINGLE, M. L. KELLMER. Language development and reading attainment of deprived children. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 77-85. (IV-7)

Investigates the general development of language and reading ability of unselected samples of children, (CA 8, 11, and 14) living in residential care with some comparison of children living with their own families.

265. PRISUTA, ROBERT H. Mass media exposure and political behavior. *Educational Broadcasting Review*, June 1973, 7, 167-173. (III-1)

Uses data from more than 1,400 interviews to determine the relationship between political behavior and amount of exposure to newspapers, magazines, television, and radio.

266. PUTNAM, LILLIAN R., & YOUTZ, ADELLA C. Is a structured reading program effective for urban disadvantaged children? *Reading World*, December 1972, *12*, 123-135. (V-5)

Matches 81 pairs of kindergarten children on readiness, teacher evaluation, intact families, and sex; compares performance after 2 years of either a structured or a basal reading program.

267. PYRCZAK, FRED. Objective evaluation of the quality of multiple-choice test items designed to measure comprehension of reading passages. *Reading Research Quarterly*, Fall 1972, 8, 62-71. (V-11)

Builds an index by which one may evaluate the quality of multiple choice test items.

268. QUANDT, IVAN. He just thinks he can't read. *Childhood Education* May 1973, 49, 438-439. (I-6)

Reviews the research literature related to self concept and reading achievement.

269. RAKES, THOMAS A. A comparative readability study of materials used to teach adults to read. *Adult Education*, Spring 1973, 23, 192-202. (III-3)

Correlates the readability estimates of 3 readability formulas with teacher judgments and publishers' estimates of the readability of 29 adult education books.

270. RAMANAUSKAS, SIGITA. Contextual constraints beyond a sentence on cloze responses of mentally retarded children. *American Journal of Mental Deficiency*, November 1972, 77, 338-345. (VI)

Uses cloze tasks with 58 EMR junior high pupils to investigate the effects of availability of contextual cues beyond a sentence.

271. RAMANAUSKAS, SIGITA. The responsiveness of cloze readability measures to linguistic variables operating over segments of text longer than a sentence. *Reading Research Quarterly*, Fall 1972, *8*, 72-91. (IV-18)

Evaluates the responses of 58 educable, mentally retarded pupils to cloze tasks to determine the linguistic constraints that are in operation between sentences.

272. RAMPP, DONALD L., & COVINGTON, JAN R. Auditory perception, reading and the initial teaching alphabet. *Journal of Learning Disabilities*, October 1972, 5, 497-500. (V-10)

Explores the effectiveness of the i.t.a. reading program for 10 boys with auditory perceptual disturbances.

273. RAMSEY, C. A., & WRIGHT, E. N. A group, English-language vocabulary knowledge test derived from the Ammons Full-Range Picture Vocabulary Test. *Psychological Reports*, August 1972, *31*, 103-109. (V-11)

Describes the development of a group vocabulary test based on a previously published test. Gives data from over 5,000 students in grades 5, 7, and 9.

274. RANKIN, EARL F., & KEHLE, TOM J. A comparison of the reading performance of college students with conventional versus negative internal (intra-article) reading flexibility. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 51-58. (V-8)

Compares reading performance before and after training of 255 college students with conventional versus negative internal reading flexibility.

275. RATEKIN, NED H. The adequacy of the cloze in measuring comprehension of different logical patterns. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 59-65. (IV-18)

Compares cloze and multiple test scores on deductive and on inductive materials given to 33 college freshmen and sophomores.

276. RAZIK, TAHER A. A study of American newspaper readability. *The Journal of Communication*, December 1969, *19*, 317-324. (III-3)

Reports the results of a study of the differences in front page readability level of 50 randomly selected metropolitan and 50 non-metropolitan newspapers. Analysis was made of 6 random sample articles per newspaper during a 2-week period.

277. REID, JESSIE F. Children's comprehension of syntactic features found in some extension readers. In Jessie F. Reid (Ed.), *Reading: problems and practices*. London: Ward Lock, 1972. Pp. 394-403. (IV-7)

Tests the comprehension ability of 6 classes of third year primary school children (mean age 7-4), on the basis of the syntactic features of the language in reading books and textbooks written for children ages 7 to 8.

278. RINGLER, LENORE H., & SMITH, INEZ L. Learning modality and word recognition of first grade children. *Journal of Learning Disabilities*, May 1973, 6, 307-312. (IV-3)

Compares learning modalities of 106 first graders to their word recognition performance.

279. ROBINSON, HELEN M. Visual and auditory modalities related to methods for beginning reading. *Reading Research Quarterly*, Fall 1972, 8, 7-39 (IV-3)

Compares the reading progress of children identified by auditory and visual abilities under 2 different approaches to reading. A total of 116 children were followed through grade 3.

280. ROBINSON, JOHN P. Perceived media bias and the 1968 vote: can the media affect behavior after all? *Journalism Quarterly*, Summer 1972, 49, 239-246. (III-1)

Focuses on the relationship between voting behavior and media usage in the 1968 presidential vote. Data were collected from 1,027 voters.

281. ROBINSON, RICHARD D. The cloze procedure: a new tool for adult education. *Adult Education*, Winter 1973, 23, 87-98. (IV-18)

Assesses the potential of the cloze procedure in adult education, using 57 inmates as subjects. Deletions included fifth word, noun-verb, and multiple choice.

282. ROEDER, HAROLD H. Mississippi teachers better prepared to teach reading than California grads. *California Journal of Educational Research*, September 1972, 23, 177-181. (II)

Reports on a survey of 860 colleges' and universities' undergraduate teacher education curricula.

283. ROSEN, CARL L., & AMES, WILBUR S. An exploration of the influence of dialect on the oral reading of sentences by black children, grades three through six. *Reading World*, March 1972, *11*, 201-209. (IV-10)

Uses 15 standard English sentences developed by Baratz to determine the effects of dialect interference on the 8 syntactic and grammatical constructions contained in them when read by 86 black children, grades 3-6.

284. ROSENGREN, KARL ERIC. News diffusion: an overview. *Journalism Quarterly*, Spring 1973, *50*, 83-91. (III-1)

Correlates factors of news event importance, rate and amount of diffusion, and medium of diffusion with the percentage of people who know about the news event.

285. ROSNER, JEROME. The development of a perceptual skills curriculum. *Journal of the American Optometric Association*, July 1973, 7, 698-707. (I)

Presents a series of studies which explore the effect of training the basic information processing skills of about 300 preschool, kindergarten, and first grade children.

286. ROSNER, JEROME. Language arts and arithmetic achievement, and specifically related perceptual skills. *American Educational Research Journal*, Winter 1973, *10*, 59-68. (IV-3)

Compares the auditory visual perceptual skills of 434 first and second graders to their achievement in reading and arithmetic.

287. ROSNER, JEROME. School achievement as related to I.Q. and perceptual skills: a comparison of predictors. *Journal of the Optometric Association*, February 1972, 44, 142-144. (V-11)

Evaluates use of IQ scores and perceptual skills scores as predictors of achievement of 72 first and second graders.

288. ROTHKOPF, ERNST Z. Experiments on mathemagenic behavior and the technology of written instruction. In Ernst Z. Rothkopf & Paul E. Johnson (Eds.), *Verbal Learning Research and the Technology of Written Instruction*. New York: Teachers College Press, Columbia University, 1971. Pp. 284-303. (I)

Presents a summary of some research related to how people learn from written material.

289. RUDE, ROBERT T. Implementation and field testing of the design. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 265-272. (V-11)

Reports performance of elementary pupils from 23 schools in the word attack component of a field test program.

290. RUDE, ROBERT T. Readiness tests: implications for early childhood education. *The Reading Teacher*, March 1973, 26, 572-580. (V-11)

Examines 5 major reading readiness batteries and analyzes the skills they assess against skills identified in the literature.

291. SAKAMOTO, TAKAHITO, & MAKITA, KIYOSHI. Japan. In John Downing (Ed.), *Comparative Reading*. New York: Macmillan, 1973. Pp. 440-465. (I)

Includes a section on recent reading research in a chapter discussing the teaching of reading in Japan.

292. SALCEDO, RODOLFO N.; READ, HADLEY; EVANS, JAMES F.; & KONG, ANA C. A broader look at legibility. *Journalism Quarterly*, Summer 1972, 49, 285-289, 295. (IV-18)

Studies 3 legibility factors using speed of reading, comprehension, reader preference, and ability to follow directions as criterion variables. A total of 567 college freshmen and adults were used as subjects.

293. SAMUELS, S. JAY. Effect of distinctive feature training on paired-associate learning. *Journal of Educational Psychology*, April 1973, 64, 164-170. (IV-4)

Hypothesizes that visual discrimination training for 90 kindergarten students on noting distinctive features of a stimulus during the perceptual learning phase facilitates S-R hook-up.

294. SAMUELS, S. JAY. Success and failure in learning to read: a critique of the research. *Reading Research Quarterly*, Winter 1973, 8, 200-239. (I)

Reviews literature on associational learning and suggests applications to study of success and failure in learning to read.

295. SAPIR, SELMA G., & WILSON, BERNICE. A developmental scale to assist in the prevention of learning disability. In Jessie F. Reid (Ed.), *Reading: Problems and Practices*. London: Ward Lock, 1972. Pp. 380-386. (IV-13)

Using 36 girls and 18 boys (CA 5-1 to 6-2), a kindergarten suburban primary school hypothesizes that problems with children in perceptual-motor, bodily schema and/or language development can be identified by kindergarten age.

296. SASSENRATH, JULIUS MARLIN, & SPARTZ, LAURA ROSSO. Retention of reading material as a function of feedback time and

testing. *California Journal of Educational Research*, September 1972, 23, 182-187. (IV-4)

Examines the effects of immediate, 4-hour, one-day, or 3-day delayed feedback on learning and retention using 194 sixth grade pupils.

297. SCHARF, ANNE G. Who likes what in high school. *Journal of Reading*, May 1973, *16*, 604-607. (IV-17)

Reports comparisons with intelligence, sex, and grade placement of what adolescents read using data collected from 414 ninth through twelfth graders on an interest inventory.

298. SCHWARTZ, T. P. Social problems awareness manifested through sociological research, newspapers, and creative literature. *The Sociological Quarterly*, Winter 1973, *14*, 53-67. (III-2)

Samples items from 4 Chicago dailies published between 1910 and 1930 to determine the amount of social problems awareness present.

299. SEYMOUR, PHILIP H. K. A model for reading, naming and comparison. *British Journal of Psychology*, February 1973, 64, 35-49 (IV)

Uses Morton's general model for word recognition and other language-processing tasks as a framework for discussion of a number of tasks in which a measure is taken of the latency to read words, name objects, or compare printed names and objects.

300. SHANKWEILER, DONALD, & LIBERMAN, ISABELLE Y. Misreading: a search for causes. In James F. Kavanagh and Ignatius G. Mattingly (Eds.), *Language by Ear and by Eye*. Cambridge, Massachusetts: The M.I.T. Press, 1972. Pp. 293-317. (IV-10)

Presents data from a number of studies which investigate children's misreadings and how they relate to language.

301. SHAPIRO, BERNARD J., & SHAPIRO, PHYLLIS. The effect of reading method on composition. *Journal of Reading Behavior*, Spring 1973, 5, 82-87. (V-5)

Reports the outcome of an investigation on 2 methods of reading instruction and their effect on the ability to write original compositions. Subjects were 293 first grade and 391 second grade pupils.

302. SHELDON, WILLIAM D. A summary of research studies related to reading instruction in elementary education: 1970. *Elementary English*, February 1973, 50, 281-320, 323. (I)

Explores research studies in reading related to elementary education. Studies are categorized by level of instruction.

303. SHELDON, WILLIAM D.; LASHINGER, DONALD R.; & CARNEY, JOHN J. A summary of research studies relating to language arts in elementary education: 1971. *Elementary English*, May 1973, *50*, 791-839. (I)

Reviews 189 studies relating to elementary language arts.

304. SIDMAN, MURRAY, & CRESSON, OSBORNE, JR. Reading and crossmodal transfer of stimulus equivalences in severe retardation. *American Journal of Mental Deficiency*, March 1973, 77, 515-523. (VI)

Explores the effect of teaching 2 severely retarded 18 and 19 year old boys to match printed words to each other and dictated words to pictures on subsequent ability to match the printed words to the pictures and read the words orally.

305. SILBERBERG, NORMAN E.; SILBERBERG, MARGARET C.; & IVERSEN, IVER A. The effects of kindergarten instruction in alphabet and numbers on first grade reading. *Journal of Learning Disabilities*, May 1972, 5, 254-261. (V-4)

Examines the effect of instruction in alphabet and number names on the first grade reading of 109 kindergarten children.

306. SILVERSTEIN, A. B. Another look at sources of variance in the *Developmental Test of Visual Perception*. *Psychological Reports*, October 1972, *31*, 557-558. (V-5)

Analyzes 12 sets of data on the Frostig test, originally analyzed by Chissom and Thomas.

307. SINATRA, RICHARD C. Summer reading program on a point reinforcer system. *Journal of Reading*, February 1973, *16*, 395-400. (V-7)

Reports on the use of a point reinforcer system in a high school summer reading program involving 36 students.

308. SINGER, HARRY. Reading content specialists for the junior high school level. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 283-291. (II)

Describes a program which gave special preparation to 12 teachers for junior high school.

309. SMITH, J. R., & JOHNSON, F. N. The popularity of children's fiction as a function of reading ease and related factors. *The*

Journal of Educational Research, May-June 1972, 65, 397-400. (IV-17)

Compares the popularity of children's fiction identified by 256 children in a comprehensive school to the readability of the books.

310. SMITH, KENNETH M., & OTTO, WAYNE. A review of the "Summary and review of investigations relating to reading" after forty-one years. *The Journal of Educational Research*, April 1973, 66, 363-368. (I)

Presents summary data for the annual reviews of research studies given in *The Journal of Educational Research*.

311. SMITH, NILA BANTON. Reading research: some notable findings. *Elementary English*, February 1973, 50, 259-263, 269. (I)

Highlights reading research studies that have useful implications for classroom instruction.

312. SMITH, PHILIP A., & MARX, RONALD W. Some cautions on the use of the Frostig Test: a factor analytic study. *Journal of Learning Disabilities*, June/July 1972, 5, 357-362. (IV-5)

Investigates the underlying factor structure of the *Frostig Developmental Test of Visual Perception* in a group of 5-10 year old children referred for educational assessment.

313. SMITH, RODNEY P. A review of selected research in language arts reported in 1971. *Journal of Reading Behavior*, Spring 1972, 4, 150-164. (I)

Describes selected research in language arts reported in 1971. Also discusses comment regarding Thorndike's 1917 article, "Reading as Reasoning: A Study of Mistakes in Paragraph Reading."

314. SORENSON, J. S., & SORENSON, D. D. A comparison of science content in magazines in 1964-65 and 1969-70. *Journalism Quarterly*, Spring 1973, 50, 97-101. (III-2)

Analyzes 8 national magazines with a circulation of more than 3 million to determine if more articles concerned with science were being printed than 5 years previously.

315. SPEARRITT, DONALD. Identification of subskills of reading comprehension by maximum likelihood factor analysis. *Reading Research Quarterly*, Fall 1972, 8, 92-111. (IV-9)

Refactors Davis' data using uniqueness analysis and other comprehensive procedures for maximum likelihood factor analysis.

316. SPRIGLE, HERBERT A. Who wants to live on Sesame Street? *Young Children*, December 1972, 28, 91-109. (V-4)

Reassesses the value of *Sesame Street* for poverty children, utilizing data gathered from grade 1 children who had seen *Sesame Street* and those who had not viewed it.

317. SPRING, CARL, & GREENBERG, LAWRENCE. Relations between teachers' ratings of abnormal motor behavior in poor readers and performance on a reaction-time test. *Journal of Reading Behavior*, Spring 1973, 5, 134-139. (IV-13)

Investigates and factor analyzes teachers' ratings of poor motor coordination in a group of 21 children considered poor readers (CA 7-12) and correlates the findings with scores on 2 reaction-time tests.

318. STARCK, KENNETH. Values and information source preferences. *The Journal of Communication*, March 1973, 23, 74-85 (III-1)

Reports on interviews of 204 individuals sampled from one midwestern community in an effort to determine whether interpersonal or impersonal sources are more important in providing information about value-directed goals.

319. START, K. B., & WELLS, B. K. *The trend of reading standards.* National Foundation for Educational Research in England and Wales, 1972. (V-2)

Reports on a national survey in England of reading comprehension for 1970-71. It is the most recent of a series of surveys started in 1938 which use 2 age groups—those in the last year of primary and those in the last year of secondary education.

320. STENNETT, R. G.; SMYTHE, P. C.; & HARDY, MADELINE. Language background, guessing, mastery and type of error in beginning reading. *The Alberta Journal of Educational Research*, September 1972, *18*, 180-189. (IV-12)

Examines the relationships between reflection-impulsivity (guessing) and reading achievement among socioeconomic levels of 81 first- and 45 second grade pupils.

321. STENNETT, R. G.; SMYTHE, P. C.; PINKNEY, June; & FAIRBAIRN, ADA. The relationship of eye movement measures to psychomotor skills and other elemental skills involved in learning to read. *Journal of Reading Behavior*, Winter 1972-73, 5, 1-13 (IV-12)

Analyzes the interrelationships among a measure of oculomotor skill, psychomotor skill, and elemental subskills of reading in 3

studies, using one sample of 82 first through fourth graders and another of 41 first and second graders.

322. STEPHENS, LOWNDES F. Media exposure and mo[illegible]ization among the Appalachian poor. *Journalism Quarterly*, Summer 1972, 49, 247-257, 262. (III-1)

Presents data on the influence of mass media exposure in 3 Kentucky Appalachian communities. Information is based on interviews with 207 heads of households and homemakers.

323. STEVENS, DEON O. Reading difficulty and classroom acceptance. *The Reading Teacher*, October 1971, 25, 52-55. (IV-14)

Utilizes a total of 886 fourth grade pupils, 24 of whom were in remedial reading classes, in a study comparing the social acceptance of the 2 groups and the self perceptions of the remedial group.

324. STEVENS, JOHN D. College students rate the comics. *Journalism Quarterly*, Spring 1973, 50, 158-159. (III-4)

Surveys 172 undergraduate students concerning their comic strip reading preferences and habits. Gives information on sex differences in reading habits.

325. STICHT, THOMAS G., & CAYLOR, JOHN S. Development and evaluation of job reading task tests. *Journal of Reading Behavior*, Fall 1972, 4, 29-50. (V-11)

Describes the development of the *Job Reading Task Tests* for 3 military jobs. Relationships of general reading ability to performance on *JRTT* are described for men in 3 groups.

326. STOODT, BARBARA D. The relationship between understanding grammatical conjunctions and reading comprehension. *Elementary English*, April 1972, 49, 502-504. (IV-7)

Explores the relationship between understanding conjunctions and the reading comprehension of 95 fourth grade pupils.

327. STRONCK, DAVID R. Comparisons between reading abilities and achievements in two aspects of science in seventh-grade students of various socioeconomic levels. *California Journal of Educational Research*, September 1972, 23, 198-206. (V-11)

Compares the reading abilities with the achievements in science of 475 seventh grade pupils representing a spectrum of socioeconomic levels.

328. SULLIVAN, JOANNA. The effects of Kephart's perceptual motor-training on a reading clinic sample. *Journal of Learning Disabilities*, November 1972, 5, 545-551. (V-10)

Studies the effects of Kephart's perceptual-motor training on the reading performance of 82 pupils in a summer reading program, including 13 who had poor binocular fusion.

329. SULLIVAN, JOANNA. The relationship of creative and convergent thinking to literal and critical reading ability of children in the upper grades. *The Journal of Educational Research*, April 1973, 66, 374-377. (IV-2)

Examines the interrelationships among a variety of creative and convergent thinking skills and the literal and critical reading ability of 250 sixth graders and 276 eighth graders.

330. SWALM, JAMES, & COX, GORDON. A content approach to reading skill development for special admit freshmen in a four year college. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 42-49. (V-8)

Evaluates a reading program designed to meet the needs and interests of 56 special admit college freshmen.

331. SWEIGER, JILL D. Designs and organizational structure of junior and community college reading programs across the country. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 1-7. (V-8)

Presents the findings of a survey of 288 junior and community college reading programs to obtain descriptive data for these programs.

332. TAYLOR, WILSON L. Relative influences of preceding, following, and surrounding contexts on cloze performance. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 66-73. (IV-18)

Varies context of cloze presentation to determine its influence on the responses of 18 college students.

333. THOMAS, JERRY R., & CHISSOM, BRAD S. An investigation of the combination of a perceptual-motor test and a cognitive ability test for the purpose of classifying first-grade children into reading groups. *Psychology in the Schools*, April 1973, *10*, 185-189. (V-11)

Attempts to assess the relationship between 2 predictor measures and 2 criteria—reading performance and general academic

ability—and to classify pupils into reading groups by the use of the predictor measures on 48 first graders.

334. THOMPSON, MURIEL C., & MASSARO, DOMINIC W. Visual information and redundancy in reading. *Journal of Experimental Psychology*, April 1973, *98*, 49-54. (IV-5)

Uses 9 undergraduates to replicate research on letter identification while controlling for redundancy.

335. TICHENOR, PHILLIP J., & WACKMAN, DANIEL B. Mass media and community public opinion. *American Behavioral Scientist*, March-April 1973, *16*, 593-606. (III-1)

Interviews 15 local officials and 125 other adults in order to determine the effect of newspapers on attitude formation about a local political topic.

336. TILLMAN, CHESTER E. Measuring outcomes in college reading programs. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 205-212. (I)

Reviews studies utilizing a variety of criteria to measure outcomes of college reading programs.

337. TIMKO, HENRY G. Letter position in trigram discrimination by beginning readers. *Perceptual and Motor Skills*, August 1972, 35, 153-154. (IV-5)

Reports the effect that change in letter position has on the tendency of 31 first graders to use the outer letters of trigrams more often than medial ones. The tests were 40 matching-to-sample discrimination.

338. TUINMAN, J. JAAP; FARR, ROGER; & BLANTON, B. ELGIT. Increase in test scores as a function of material rewards. *Journal of Educational Measurement*, Fall 1972, *9*, 215-223. (V-11)

Uses 160 junior high school students to assess changes on pre- and post test scores with no intervening instruction.

339. TUINMAN, J. JAAP; FLANIGAN, MICHAEL C.; & BLANTON, B. ELGIT. Subjects' awareness of response alternatives in cloze tasks. *The Journal of General Psychology*, January 1973, *88*, 13-21. (IV-18)

Explores the awareness of 50 college students of alternative responses in cloze tasks using 2 passages differing in difficulty.

340. TURAIDS, DAINIS; WEPMAN, JOSEPH M.; & MORENCY, ANNE. A perceptual test battery: development and standardization.

The Elementary School Journal, April 1972, 72, 351-361. (V-11)

Describes the development and standardization of a test battery exploring the auditory and visual perceptual processing abilities of children. The sample consisted of 1,008 children, ages 5-8, who were individually tested.

341. TURNER, BARBARA, & GILLILAND, JOHN. The use of cloze procedure in the measurement of the readability of Schools Council Humanities Project materials. *Reading*, June 1972, 6, 4-13. (IV-18)

Examines the value of the cloze procedure as a measure of readability and investigates the extent to which average and below average pupils find specific project material readable. Includes 40 fourth year British secondary pupils as subjects.

342. URCH, GEORGE E. The textbook against the world. *Educational Leadership*, April 1971, 28, 747-751. (III-2)

Reports results of a content analysis of secondary social studies textbooks in terms of cultures, cultural patterns, social transitions, value orientation of non-western people, and negative and positive influences of western culture on other cultures.

343. VANDEVER, THOMAS R., & NEVILLE, DONALD D. The effectiveness of tracing for good and poor decoders. *Journal of Reading Behavior*, Spring 1973, 5, 119-125. (V-10)

Assesses whether tracing cues are as effective as visual and auditory cues for good and poor decoders at the first grade level. Forty children with an average age range from 84.5 months to 84.8 months were included.

344. VANDE VOORT, LEWIS, & SENF, GERALD M. Audiovisual integration in retarded readers. *Journal of Learning Disabilities*, March 1973, 6, 170-179. (IV-13)

Explores basic visual and auditory abilities which could account for auditory-visual integration problems by comparing 16 retarded with 16 normal readers.

345. VAN TUBERGEN, G. NORMAN, & FRIEDLAND, KAREN E. Preference patterns for comic strips among teenagers. *Journalism Quarterly*, Winter 1972, 49, 745-750. (III-4)

Seeks patterns of preferences for 30 comic strips among 24 junior and senior high school subjects. A Q-sort technique is used to have subjects rank order comics, and factors describing patterns of preference are identified.

346 VELLUTINO, FRANK R.; STEGER, JOSEPH A.; & PRUZEK, ROBERT M. Inter- vs. intransensory deficit in paired associate

learning in poor and normal readers. *Canadian Journal of Behavioral Science*, April 1973, 5, 111-123. (IV-5)

Compares good and poor readers in 2 groups of 30 fourth and sixth graders on visual-visual and visual-auditory paired associate tasks.

347. VENEZKY, RICHARD L. Letter-sound generalizations of first-, second-, and third-grade Finnish children. *Journal of Educational Psychology*, June 1973, 64, 288-292. (IV-3)

Identifies 240 Finnish children on sex and SES level and correlates the ability to pronounce synthetic words with reading ability at grades 1, 2, and 3.

348. VENEZKY, RICHARD L., & JOHNSON, DALE. Development of two letter-sound patterns in grades one through three. *Journal of Educational Psychology*, February 1973, 64, 109-115. (V-5)

Investigates 4 letter-sound generalizations using 73 primary grade children.

349. VILANILAM, JOHN V. Foreign news in two US newspapers and Indian newspapers during selected periods. *Gazette*, 1972, *18*, 96-108. (III-2)

Compares the treatment of foreign news in 2 US newspapers and 2 Indian newspapers.

350. WARK, DAVID M.; TOSTENRUD, DIANA; & NELMS, GEORGE. Heart rate and reading. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 153-160. (IV-1)

Investigates changes in the heart rate of college students during reading.

351. WATTS, GRAEME H. The "arousal" effect of adjunct questions on recall from prose materials. *Australian Journal of Psychology*, April 1973, 25, 81-87. (IV-4)

Describes 2 experiments using fifth and sixth grade children which examined the effect of questions within the text under "low" and "high" arousal conditions. In the second experiment subjects were grouped by level of test anxiety.

352. WEINTRAUB, SAMUEL. *Auditory perception and deafness*. Newark, Delaware: ERIC/CRIER + IRA, 1972. (I)

Presents an annotated bibliography of research and research reviews in audition, auditory abilities, and deafness.

353. WEINTRAUB, SAMUEL. *Vision—visual discrimination*. Newark, Delaware: ERIC/CRIER + IRA, 1973. Pp. 1-79. (I)

Presents a wide array of opinion and research articles dealing with the functioning of eyes in reading.

354. WEINTRAUB, SAMUEL. What research says about reading in the intermediate years. In Helen M. Robinson (Ed.), *Improving Reading in the Intermediate Years*. Glenview, Illinois: Scott, Foresman, 1973. Pp. 185-202. (I)

Reviews selected research at the intermediate levels and discusses implications for classroom instruction.

355. WEINTRAUB, SAMUEL; ROBINSON, HELEN M.; SMITH, HELEN K.; & PLESSAS, GUS P. Summary of investigations relating to reading, July 1, 1971, to June 30, 1972. *Reading Research Quarterly*, Spring 1973, 8. (I)

Summarizes 302 published research reports in reading. Includes an annotated bibliography.

356. WHETSTONE, ROBERT D., & COULTER, TED. A longitudinal evaluation of the variables in a reading and study skills program in the community college. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 213-220. (V-8)

Evaluates 9 methods of applying time constraints as part of the instructional process in a reading program which involved 235 community college freshmen.

357. WHITTAKER, JEWELEANE WILMA. Teaching reading to college students whose backgrounds are disadvantaged. In Frank P. Greene (Ed.), College reading: problems and programs of junior and senior colleges. *Twenty-first Yearbook of the National Reading Conference*, 1972, vol. 2. Pp. 68-72. (V-8)

Describes a longitudinal study of 332 freshmen college students from disadvantaged backgrounds to determine the differential effectiveness of a textbook-oriented and machine-oriented approach in teaching reading.

358. WIIK, SUSAN L. The sexual bias of textbook literature. *English Journal*, February 1973, 62, 224-229. (III-2)

Selects 15 literature anthologies frequently used at grades 7, 8, and 9 and published since 1963 for an examination of the roles given to male and female major characters, authors, and animal characters.

359. WILLIAMS, JEAN H. The relationship of self-concept and reading achievement in first grade children. *The Journal of Educational Research*, April 1973, 66, 378-380. (IV-14)

Explores the relationship between the self concepts of 133 first graders and their reading achievement with consideration of relations among ethnic background, IQ, and reading readiness.

360. WILLIAMS, MAURICE, & STEVENS, VIRGINIA M. R. Understanding paragraph structure. *Journal of Reading*, April 1972, *15*, 513-516. (V-7)

Evaluates the effectiveness of teaching methods in identifying the main idea of a paragraph in a study of 382 third to sixth graders and 531 seventh to tenth graders.

361. WOMEN ON WORDS & IMAGES. *Dick and Jane as victims: sex stereotyping in children's readers*. Princeton, New Jersey: Author, 1972. (III-2)

Analyzes 2,760 stories found in 134 elementary school basal readers from 14 different publishers. Materials are analyzed for treatment of sexes and suggestions for change are made.

362. WOOD, JOHN A., & HAASE, ANNE MARIE BERNAZZA. Aptitude interaction analysis: a necessity in reading research. In Frank P. Greene (Ed.), Investigations relating to mature reading. *Twenty-first Yearbook of the National Reading Conference*, 1972. Pp. 161-170. (IV-12)

Uses interaction analysis to investigate effects of teacher gender, student gender, and training material on the reading achievement of 40 seventh graders.

363. YELLIN, JEAN FAGAN. *The intricate knot: black figures in American literature, 1776-1863*. New York: New York University Press, 1972. (III-2)

Identifies selected American writings between 1776 and 1863 and analyzes the characterization of blacks in these materials.

364. YUSSEN, STEVEN R. The effects of verbal and visual highlighting of dimensions on discrimination learning by preschoolers and second graders. *Child Development*, September 1972, 43, 921-929. (IV-4)

Describes discrimination training given 60 preschoolers and 60 second graders. Training involved 2 simultaneously presented forms under different conditions of visual and verbal highlighting of dimensions. A transfer problem was then presented.

365. ZACCARIA, LUCY; CREASER, JAMES; JACOBS, MITCHELL; & CARSELLO, CARMEN. Disadvantaged students in the traditional university reading improvement program. *Journal of Reading Behavior*, Fall 1972, 4, 12-17. (V-8)

Assesses the effectiveness of a traditionally oriented college reading improvement program for 59 culturally disadvantaged students and 118 regular students.

366. ZARITSKY, JOYCE. Behavioral management techniques as applied to homework hand-ins: precision teaching with college students. *Reading World*, May 1973, *12*, 269-275. (V-8)

Assesses the effect of an arranged event or contingency on the behavior of 18 freshman college students with below average high school grades and reading scores.

367. ZORN, FREDERICK J. The science-language arts care program...improving reading skills through junior high school science. *School Science and Mathematics*, May 1973, 73, 409-413. (V-6)

Reports on a project in which science and language arts were integrated for eighth grade, lower level reading ability students.

368. ZUBE, MARGARET J. Changing concepts of morality: 1948-69. *Social Forces*, March 1972, 50, 385-393. (III-2)

Reports on the use of both a quantitative and a qualitative content analysis of the *Ladies' Home Journal* over the period 1948 to 1969.

369. ZUNINO, GERALD J. Afro-American history curricula in the senior high school. *The Journal of Negro Education*, Spring 1973, 2, 142-163. (III-2)

Describes the development of a content outline to evaluate the treatment of Afro-Americans and applies it to 46 curricular materials.

INTERNATIONAL READING ASSOCIATION
1973-1974

OFFICERS

President: MILLARD H. BLACK, *Los Angeles Unified School District, Los Angeles, California*
President-elect: CONSTANCE M. MCCULLOUGH, *California State University, San Francisco, California*
Past President: WILLIAM K. DURR, *Michigan State University, East Lansing, Michigan*
Executive Secretary-Treasurer: RALPH C. STAIGER
Assistant Executive Secretaries: RONALD W. MITCHELL and JAMES M. SAWYER

DIRECTORS

Term expiring Spring 1974
WILLIAM ELLER, *State University of New York, Buffalo, New York*
WILLIAM J. IVERSON, *Stanford University, Stanford, California*
EUNICE SHAED NEWTON, *Howard University, Washington, D.C.*

Term expiring Spring 1975
HAROLD L. HERBER, *Syracuse University, Syracuse, New York*
HELEN K. SMITH, *University of Miami, Coral Gables, Florida*
GRACE S. WALBY, *Child Guidance Clinic of Greater Winnipeg, Winnipeg, Manitoba*

Term expiring Spring 1976
IRA E. AARON, *University of Georgia, Athens, Georgia*
LYNETTE SAINE GAINES, *University of South Alabama, Mobile, Alabama*
TRACY F. TYLER, JR., *Robbinsdale Area Schools, Robbinsdale, Minnesota*

COMMITTEE CHAIRPERSONS 1973-1974

Association of American Publishers/IRA Liaison
CONSTANCE M. MCCULLOUGH, IRA
THEODORE WALLER, AAP

Association of State English and Reading Supervisors/IRA Liaison
ROBERT FARRAR KINDER

Basic Education and Reading
ANN P. HAYES

Building Fund
DONALD L. CLELAND

Bylaws
BROTHER LEONARD COURTNEY

Canadian Organization
H. ELIZABETH ORCHARD

Childrens Book Council/IRA Liaison
VIVIAN O. WINDLEY, IRA
DOROTHY BRILEY, CBC

Citations and Awards
GERTRUDE WHIPPLE

Subcommittee on Citations of Merit and Service Awards
THOMAS D. HORN

Subcommittee on Nonprint Media Awards
JACK W. HUMPHREY

Subcommittee on Print Media Awards
CLIFFORD PENNOCK

Subcommittee on Research Awards
HARVEY ALPERT

Disabled Reader
JULES C. ABRAMS

Early Childhood and Reading Development
JEAN M. LE PERE

Eric Clearinghouse on Reading and Communications Skills/IRA Liaison
LEO FAY

Evaluation
DAVID E. WILDER

Evaluation of Tests
J. JAAP TUINMAN

Headquarters
WILLIAM J. IVERSON

History of IRA
BOB W. JEREOLDS

Instructional Technology and Reading
[illegible]D W. DAVIS

Legislative
RALPH C. PRESTON

Library Resources and Reading Improvement
SARA INNIS FENWICK

Linguistics and Reading
ROGER W. SHUY

Membership and Organization - U.S.
JAMES M. SAWYER

Nominating
THEODORE L. HARRIS, 1973-1974
WILLIAM K. DURR, 1974-1975

Open Classroom and Reading
JOHN MCINNES

Paraprofessionals and Reading
EVELYN B. TAYLOR

Parents and Reading: Congress of Parents and Teachers/IRA Liaison
EVELYN M. PICKARTS, IRA
ELIZABETH MALLORY, PTA

Professional Standards and Ethics
GLEN CHRONISTER

Program
Annual Convention
MILLARD H. BLACK
CONSTANCE M. MCCULLOUGH

Regional Conferences
WILLIAM K. DURR

World Congress, 1974
JOHN E. MERRITT

Publications
JOSEPH S. NEMETH

Reading for the Disadvantaged
MILDRED H. FREEMAN

Reading for the Gifted and Creative
MICHAEL LABUDA

Resolutions
ETHEL M. KING

Studies and Research
S. JAY SAMUELS

Teacher Education (Preservice and Continuing)
HARRY W. SARTAIN

Teaching Reading to Spanish Speaking Students
A. R. RAMIREZ